

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The Fairbanks Testing Machine.

The Fairbanks Testing Machine, which we illustrate in the accompanying engravings, has been examined by a sub-committee on science and arts of the Franklin Institute of Philadelphia, the members of which—Messrs. H. Cartwright, Wm. H. Thorne, Wm. D. Marks, J. Haug, L. R. Faught and J. Zentmayer—have signed the following report, which, as it contains a full description of the construction and method of operating the machine, we print in full:

The machine consists of a section of track scale of their usual type, having a platform about 8 feet long by 4 feet wide, resting at its four corners on knife edges in four multiplying levers. The fulcrums of these levers are supported on knife edges in links freely suspended in yoke castings, which are connected together in pairs by transverse wrought-iron frames and bolted on a strong, well-braced timber foundation, while the long ends of the levers are connected, by means of links and knife edges, with a series of long, multiplying levers leading to a graduated beam similar to that of the ordinary platform scale.

This weighing apparatus is excellent, every part being carefully proportioned to the work it has to do, and the whole arrangement being well adapted to insure the greatest accuracy with the least liability to wear or derangement, the only objection to it being the space occupied—12 by 6 feet—occasioned by the length of the levers and the openness and simplicity of the construction.

On top of the platform are four inclined cast-iron columns, supporting a cross-head from which is suspended the wrought-iron head, with the wedge-shaped clamps for holding one end of the specimen to be tested for tensile strength. The other end of the specimen is clamped in a similar head, connected to a cross-head which can be moved up and down by two screws which are supported at their upper ends in bearings bolted to a timber framework, and pass down through the platform of the scale to bearings in a strong cross girt between the beams on which the scale rests. The screws are rotated by means of tangent wheels operated by worms on a transverse shaft, on one end of which is a pulley with a crank handle. On the other end of this shaft is a large gear wheel, worked by a pinion with a similar pulley and crank handle. When motion is given to either of these pulleys, the rotation of the screws draws down the movable cross-head with the clamp holding one end of the specimen, and as the clamp holding the other end is supported by the scale platform, any strain put upon the specimen will be shown by the beam precisely as if the platform was acted upon by a weight.

When tests for transverse strength are to be made, the specimen is supported on two knife-edges resting on the platform at a definite distance apart, while a central knife-edge on the under side of the movable cross-head is brought to bear upon it by the screws as before.

In testing metals it is essential that the gripe of the wedge clamps on the sides of the specimen shall be uniform, and not tighter on one edge than on the other, in order that the strain shall be equal on the entire cross section and produce no tearing tendency. To effect this, one of the wedges is made rounding on its back and with side play in its seat, so that it can adjust itself to any inequalities or want of parallelism in the specimen.

An ingenious and efficient device is applied to the graduated beam by which the small poise is moved out automatically as long as the beam is up, but stops whenever the beam falls, thus recording the exact point at which the specimen breaks, and enabling one man to make a test with accuracy.

The process of making a test is as follows: After fixing the specimen in place, the heavy poise is set at the notch on the beam at which the specimen is expected to stretch, and the small poise drawn back to zero. The crank on the worm shaft is then rotated until the beam rises, when the small poise commences to move out automatically. At this point it is usual to change to the other crank in order to gain power and to prevent overrunning the motion of the small poise. With care the beam can be kept in a horizontal position with a poise just balancing the strain. When the elastic limit is exceeded, the specimen yields rapidly, the motion of the crank has to be increased, and finally, when the specimen breaks, the beam falls, stopping instantly the motion of the poise. The position of the poise then indicates the exact weight which broke the specimen.

We consider this machine accurate and reliable, easy to be understood and manipulated, and with little tendency to wear or to derangement of its parts, and that its design and mode of construction would enable any repairs or renewals to be easily and cheaply made.

An Edison telephone has been put in operation in one of the Leadville carbonate mines and works well. The mine will henceforth be worked by orders per telephone, much time being thus saved. This is the first experiment of the kind ever made. It is proposed to introduce Edison's electric light in the mines there. It would be a considerable saving of money.

SCIENTIFIC AND TECHNICAL.

An important chemical discovery has been made by Victor and Carl Mayer, of the Zürich Polytechnic Institute, who have ascertained, with the aid of a simple method for the approximate determination of vapor densities, that

CHLORINE IS NOT AN ELEMENT.

They used a bulb of porcelain closed at bottom and having a tube of some length attached at top, in the side of which is a lateral tube by which the air may be conducted to a graduated tube. The vertical tube is to be closed. To use it, the apparatus is placed in a Perrot gas furnace. After the

the molecular constitution of chlorine, or from an actual decomposition into some new gases! In other words, is chlorine an element! Thereupon the expanded chlorine gas was slowly caused to stream into a fluid that absorbs chlorine. Potassa, iodide of potassium and mercury were all used for the purpose, and with the same result—a gas accumulated in the measuring tube that was not chlorine, but oxygen. Chlorine was thereby proved to be not an element, but an oxide of some new element. A number of careful investigations were then made to be sure that the chlorine used was absolutely pure and dry, but with the same result. The new element, hypothetically called murium, has not yet been isolated, but the learned

lieu thereof a spring or weight may be used to move the valve in one direction.

Mr. George Whitehead, an English engineer, recently exhibited at the Park View Steel Works, Owlestone, near Sheffield,

A NEW PROCESS OF CONSTRUCTING BOILERS.

A ring of steel is cast and heated. Then it is placed upon a large roller, and by the aid of smaller rollers it is enlarged to the requisite dimensions. The ring is run from one end of the roller to the other, and is returned by a reversing of the machinery. The other portions necessary for the completion of the boiler are subsequently put on with bolts. The machinery is rather expensive, and it is its cost which is said to be

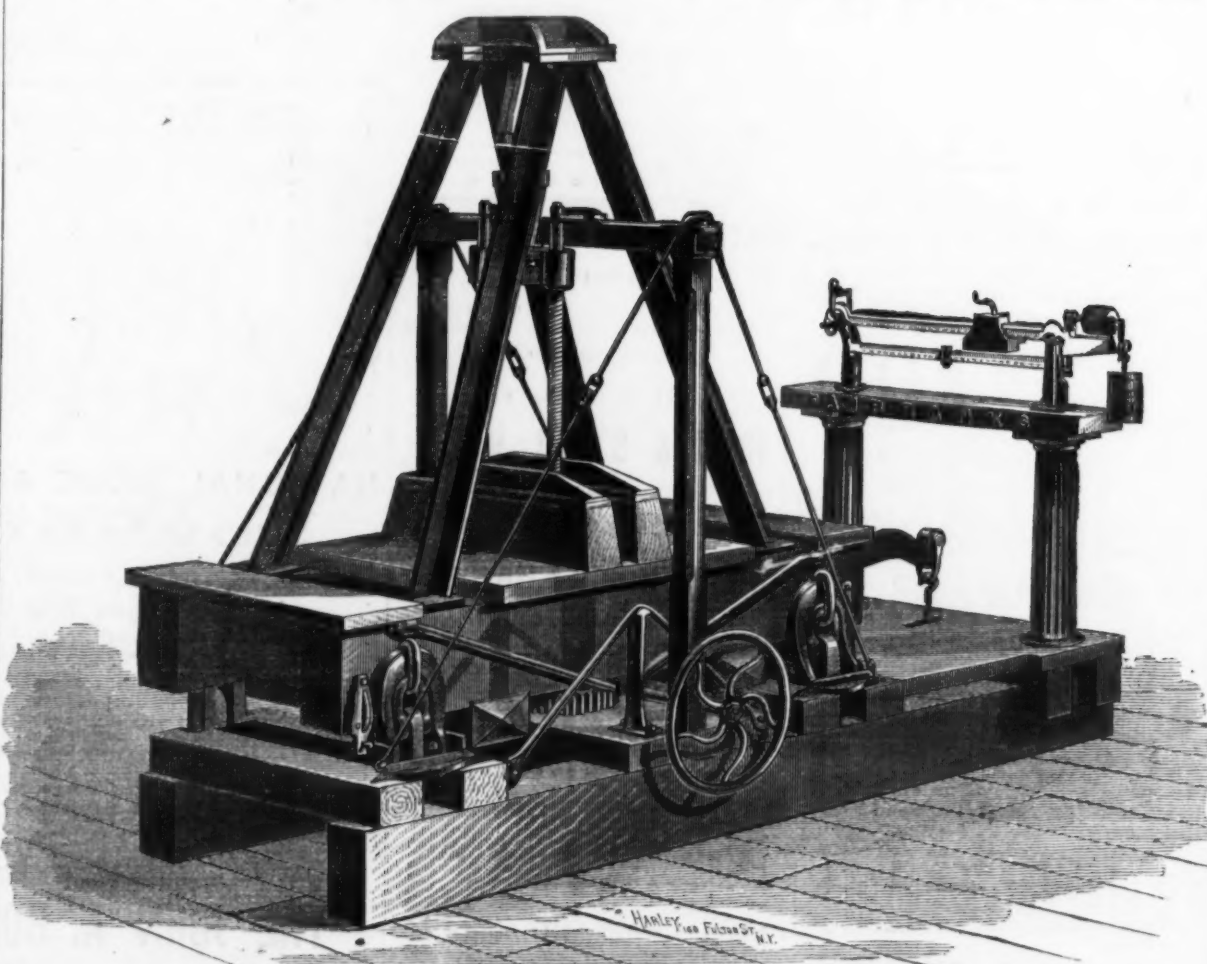
with the water pipes of Baltimore, while the other end of the wire coil was joined to a gas pipe of the house, situated in the northwestern part of the city. Thus a vast system of metallic wires stretched away three miles to the northwest to the reservoir, and also extended to the gas works, distant two to three miles to the southeast. A thunder storm was raging at the time, at so great a distance in the north that only the illumination of the clouds told when a flash occurred. Yet, whenever that flash took place, the needle of the galvanometer was instantly deflected through 10 to 20 degrees. The two occurrences were simultaneous apparently, for no difference in the instant of their manifestation could be detected. Indeed, so sure an indicator of the flash was the galvanometer, that when Prof. Mayer shut himself up in a dark room, signaling to an observer of the storm when the needle moved, and receiving from him a signal when a flash of lightning occurred, the signals were simultaneous. The next day it was ascertained that the storm was 12 miles distant to the north; therefore, at least 500 square miles of the earth's surface had its electrical condition changed at each flash of the lightning.

The Biography of a Locomotive.

A correspondent of the Boston Herald, writing from Altoona, Pa., with regard to the great workshops of the Pennsylvania Railroad and the wear of a locomotive, says: The engine, once in service, is by no means lost sight of. Its movements are as thoroughly noted as are those of an ocean steamer. In Mr. Ely's office in this city there is an immense board covered with little pegs, upon which hang small, round, colored disks, from the under part of which has been cut a small portion. These pegs and disks are numbered from 1 to 1250. Each number corresponds with an engine. On one part of the board the pegs are numbered consecutively. Looking at this part for any particular engine that may be desired, and on the disk will be found "Pgh," "N. Y." or "P.," &c. This refers you to the division where the engine is. Looking to that division on the board and finding the number on the engine, another little disk, by means of its color, will tell you just what condition the engine is in. If the disk is pure white the engine is in perfect order. If the disk is bordered by a red line the engine needs only such slight repairs as may be made without withdrawing it from the service. If the disk is covered one-half with red, repairs are required of a very slight nature, but for which the engine must proceed to the shop. If the entire disk is pale gray, repairs of a most important character are needed, though still deemed slight. A disk entirely blue denotes a machine that needs very substantial repairs. One-half black and half white indicates the machine is being built over. A disk all black denotes an engine dead, unfit save to be cut up or sold. This record is changed every week, and is so complete as to enable any one to see at a glance just the condition of the motive power. Repairs are never undertaken if they will cost over \$3,000. For that a new standard boiler can be built, and unless an engine is of the standard pattern she is never built over. For the company does not wish to perpetuate odd engines, and to pay more than \$3,000 would not be so economical as to pay the interest on the value of a new machine. Here, again, true economy steps in to change the practice of blind conservatism. An engine on this road is always most carefully used. After the locomotive is placed in the hands of an engineer it is cared for with the watchfulness of a parent's affection. A most accurate record of its performance is made, kept and compared with that of other engines. As freight is paid for per ton per mile, so the cost of an engine is reckoned. The amount of coal consumed per car per engine mile being calculated, it is easy to see, by dividing this by the tonnage, just how much coal it takes to move a ton of freight one engine mile. And the engine that does this most successfully is the cheapest.

Finally, after having traveled many thousands of miles, having safely hauled millions of human beings, our locomotive is sent to the shop condemned, dead. It is ignominiously bundled off into a corner to stand with a lot of others until cut up or sold off. Its immediate neighbors may be others like itself, worn out, perhaps "died in the harness," or again victims of the vain wrath and assassin-like communism of Pittsburgh rioters. The little disk that records in the superintendent's office its physical condition has turned to black. There is no hope. Tomorrow a committee of inspection will condemn it to be cut to pieces. Into the furnace the parts will go, to emerge, like the mill where old men were ground into now, rejuvenated, ready to take a place in some new monster with steel heart and transmigrated soul.

A conference of delegates, representing 200,000 miners, was held in Manchester on the 14th instant. Mr. Macdonald, president of the Conference, pointed out that there was some opening for miners in the United States, as during the recent depression in the mining industry in Pennsylvania and elsewhere a number of men sought other employment. A resolution was unanimously passed in favor of emigration to the United States.



THE FAIRBANKS TESTING MACHINE.

temperature, which is determined calorimetrically by means of a block of platinum, has become constant and the air in the cylinder has finished expanding, the end of the lateral delivery tube is placed beneath a graduated tube full of water, the stopper is removed, the substance dropped through the tube into the cylinder and the vessel closed. The substance volatilizes at once and expels its own volume of air from the vessel, which is collected and measured in the graduated

professors are carrying out the important investigation with all diligence, so that doubtless within the course of a few weeks we shall hear more of the new element.

Massey, the well-known steam-hammer builder of Openshaw, Manchester, has recently introduced

SOME MODIFICATIONS OF DETAIL IN STEAM HAMMERS,

by which a self-acting motion is given to the

the point upon which the success of the invention hinges. The inventor claims that within six hours he can construct the shell of a boiler of a more durable nature than those now used.

Two Germans, Bonbriel and Beck, have patented a method of making

LAMP-WICKS OF GLASS THREAD,

which is sewn in cotton. The first three days it is recommended to gently clear



AUTOMATIC BALANCE DEVICE.

tube. Neither the capacity of the vessel nor the temperature of the bath is needed in the calculation. This requires only the weight of the substance, the temperature of the room, the height of the barometer and the volume of air expelled. Armed with this apparatus they first determined the vapor densities of a number of sulphides and chlorides, and then turned to the commoner elements. At length they tried chlorine, which gas was obtained by heating pure dry bichloride of platinum, but the results were not in accordance with theory. When the gas was heated at temperatures under and up to 620° C. it gave a vapor density of 2.46, while theory gives 2.45. This was very good; but at 803° C. the density was only 2.20. At 1028° C. it gave 1.87, while at from 1242° C. to 1567° C. the density remained nearly constant as 1.64 average. From this it was to be inferred that two molecules of chlorine at temperatures above 1200° C. break up into three molecules. Next came the question, Does this arise from an alteration of

slide-valve, thereby constituting the tool automatic in its action. For this purpose a curved lever is employed which is capable of turning upon a fixed center, and extending between studs or other such parts carried by apparatus connected to the top, and by these means the bent lever is caused to vibrate and carry with it a connecting-rod, jointed at its other end to the valve-spindle. This spindle carries a projecting part, situated in the same plane as a bar provided with inclines, and as the vibratory motion takes place this projecting part runs up and down the inclines, thus effecting a self-acting movement to the valve. The position of the inclines may be fixed or variable, so as to cause the movements of the hammer to be constant or variable. Instead of employing the connecting-rod as above described, the valve-spindle may be lengthened and have a slot formed in it, and a bar connected with the wiper-bar, inclines being made to slide backward and forward through this slot; or one of the inclines may be omitted, and in

away the burnt parts of the tissue with a cloth before lighting the lamp, so as to leave the glass threads free. When this has been done the wick burns without any further cleaning as long as the lamp is in use. If, after long use, there forms at the upper part of the wick a hard crust of fused glass, cotton residue and oil particles (which does not indeed affect the luminous force, but makes it difficult to turn down the wick), the wick should be pressed down into the burner with some flat surface; the crust then breaks off. Such a crust forms, as a rule, only where the lamp has been extinguished by blowing out and not by turning down.

Prof. Alfred M. Mayer, of the Stevens Institute, writing to the *Scientific American*, gives the following account of an experiment made by him at Baltimore many years since, to show the

EXTENT OF THE EARTH'S SURFACE AFFECTED BY LIGHTNING.

One wire of a galvanometer was connected

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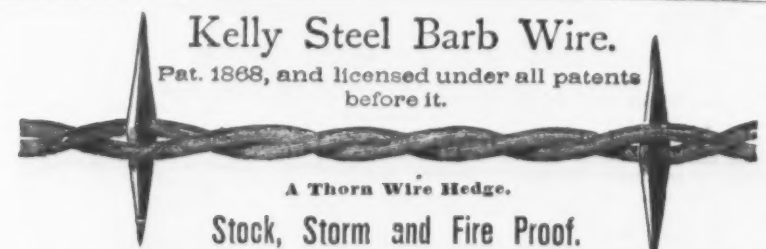
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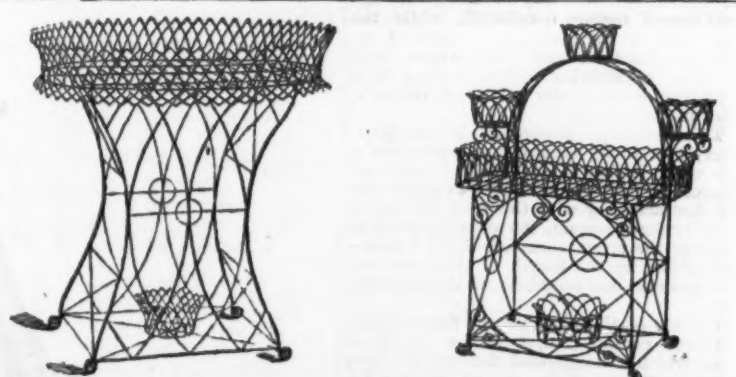
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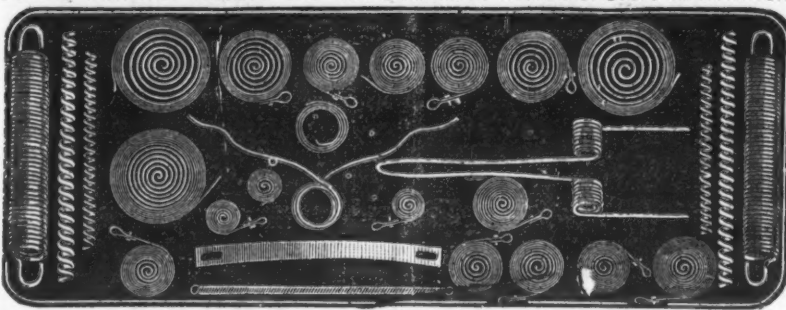
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In 1827 Herr Krupp employed four workmen in the manufacture of cast steel at Essen. He was a man of average means, and more than average means, and had luck. He lost his money by inventions as unsuccessful as ingenious, and dying, bequeathed to his son, a lad of some 17 years, his business, his debts and his talents. Young Friedrich worked on laboriously, meeting with innumerable disappointments. Even in the engineering world the impression prevailed that though steel was extremely hard and so suited for cutlery and tools, and elastic and therefore adapted for swords and springs, it was peculiarly brittle, and liable upon violent treatment to fly to pieces. It took a long time to convince people that any degree of toughness could be imparted to it, but ultimately the "mild" steel of Essen forced his way into favor, and the tide of fortune turned. For a long time Krupp's works had a virtual monopoly of weldless steel tires, and then he drove an immense business in crank shafts and locomotive axles. He first discovered the method of casting steel in very large masses, and sent to the World's Fair of 1851 a block weighing 45 German quintals—a wonder of its time, though the works of Essen have since turned out blocks one hundred times its size. Meanwhile he had entertained the idea that steel cannon would be a success and revolutionize warfare, and in 1847 had cast a small steel gun, a three-pounder.

Not until 1850 did Herr Krupp cast a second gun. It was a six-pounder. Though the experiments with it were successful, the Prussian government did not regard the Krupp gun with favor, and in despair the inventor placed himself in communication with the French. Napoleon III had a taste for artillery and promptly accepted the manufacturer's overtures, but ere the negotiations were concluded Krupp wrote to Berlin that he was about to sell the inventions to France and the last chance for Prussia to acquire them would be gone in a few hours. The Prussian government took the alarm and instantly closed a bargain with him, and the works of Essen were at last launched in the special course wherein they have won such fame.

On the 5th of the present month there assembled at Meppen 120 representatives of the various governments of the world. France alone was not invited to send officers to witness and report upon the trial of a 72-ton steel breech-loader.

The Rothschilds only of all the Emperor William's subjects return a larger income than Herr Krupp. Not even the Rothschilds set in motion so many hands. In the cast steel works of Essen there are employed 8500 men, though in these piping times of peace and depression the staff is considerably reduced. With their wives and children, 16,200 souls in all, they inhabit 3277 houses. Two thousand children and 250 adults attend the industrial and training schools. A steam flour mill and a bakery produce for the work people at Essen 215 tons of bread every month; a slaughter house, eight breweries and a mineral water factory are kept busy supplying their other wants, while 22 shops for the sale of clothing, shoes, furniture and miscellaneous articles never lack customers. There are outlying colonies of 5300 workers in the German coal and iron mines and in iron mines at Bilbao, and five of Krupp's steamships, besides other vessels, annually bring 200,000 tons of iron metal from Spain. The factory walls inclose a space of 938 acres, of which 185 are covered with buildings. There are 1648 furnaces, 298 steam boilers, 77 steam hammers, 18 rolling mills and 294 steam engines, with a collective horse-power of 11,000 horses. The average daily consumption of the works is 1800 tons of coal or coke and 4,041,750 gallons of water. The various departments are linked to each other by 38 miles of telegraph wire, with 44 stations; there is a broad gauge railroad 25 miles long, with 14 locomotives and 537 cars, and a narrow gauge line 12 miles long, with 10 locomotives and 210 cars. Eight steam fire engines, with as many companies of firemen, guard against conflagrations. The place is lit by 21,215 gas-burners, of which 1778 are used to illuminate the roads. When all the machinery is at work Essen can turn out in one day 10,125 meters of rails, 350 tires for car-wheels, 150 axles and 180 complete wheels and 1500 shells. Up to 1877 there had been cast at the works 15,000 steel guns of every caliber. In a month there can be produced complete 250 field-pieces, 30 15-centimeter guns, 15 24-centimeter pieces, 8 of 28 centimeters and 1 of 35 1/2 centimeters. For the purpose of trying the guns there is a range at Dülmen almost five miles long; a new one has just been provided at Meppen for the experiments of 1879. The Meppen range is a tract nearly 11 miles long and two and one-half wide, containing some 17,000 acres of sandy subsoil. Its length can be increased by about four miles. At short distances around the ground are watchmen with signals, the nature of which is explained to the public by placards distributed throughout the neighborhood, hung in the inns, &c. At the extremity nearest Meppen are the gun-stands, on bases of granite and masonry sunk into the ground to a depth of 11 feet. Behind them are the platform for observation, and a traveling crane to lift the huge pieces of artillery on and off the stands and convey them away. The powder magazines, workmen's cottages, &c., make up a small village. All parts of the range are connected by telegraph wires. Herr Prehn, a Prussian artillery officer, disabled in the last war, an expert mathematician and authority in ballistics, superintends the experiments. The workmen are nearly all drawn from the population of the neighborhood, and have not, for the most part, served in the army. It is upon this ground that the experiments have been tried this month, special trains conveying Herr Krupp's guests out from Munster, 40 miles away, every morning and back every evening.

Herr Krupp's dwelling stands on an eminence commanding a fine view of the pretty river Ruhr, with the cozy little town of Verdun nestling below in the valley, and on the other side in the distance Essen, with its countless stacks and chimneys. He is a tall,

fine-looking man of remarkably commanding presence, with white hair and beard, high forehead, bright eyes and a strikingly intellectual expression. At 70 his natural force is not abated, but he is active and energetic. His broad breast is not broad enough for the medals and orders that have been conferred upon him by his own and other sovereigns; he has repeatedly declined a patent of nobility during the last 15 years. "Herr Krupp was I born and Herr Krupp will I die," is his invariable answer, and to every visitor of the works is shown—carefully railed in and neatly kept in the very heart of the bustling place, where space is most valuable—the little cottage where his father died and himself was born. His own residence stands on the summit which it was his delight as a boy to scale, and where he planned its site and character while in his teens and confident of fortune. His wife he saw for the first time in a theater at Cologne; struck by her fresh girlish face, he begged an introduction that night, was engaged next day, and married within the week. The marriage proved a most happy one, and Frau Krupp, a kind hostess and generous benefactress, is beloved all along the country side. Their son, a clever young man of 25, and Herr Krupp's brother-in-law are at the head of the committee to which the practical management of the Empire of Essen is intrusted. "I am getting old now," says the old man, "and they must learn to do without me." But though he very rarely visits the workshops, daily at 3 o'clock he retires to his room, and with a big pencil jots down his thoughts and ideas on a pile of foolscap sheets which he throws to the floor as they are filled, to be subsequently collected, sorted and sent to the Junta at Essen.

Of the 18,000 Krupp guns manufactured at Essen, 22 only have burst, and the great majority of these were destroyed during trials to test their power of endurance or resistance, when of course they were loaded with charges heavier than they were designed to fire. Of the 11,600 guns made on the new system since 1870, only 5 have come to grief, the other 17 accidents being among the 6400 old pattern pieces. The first piece burst was a 68-pounder sent to England in 1855; it was fired with a 28-pound charge of powder, the usual charge being 7 pounds, and a projectile with a ring of wrought iron to expand and fill up the bore. The result of this arrangement was that the gun was fractured just behind the ring. In 1875 one gun was destroyed by the premature explosion of a shell; through a similar accident the muzzle of another gun was blown off in 1877; in the other cases the guns have burst owing to the shot jamming in the bore. In every case that is recorded the material of the gun was found to be faultless. It is worth mentioning here that two cases, cited in several books, of the explosion of Krupp guns on Russian men-of-war, were in March last declared inventions by the Russian marine authorities.

The artillery trials last made included 25 experiments. The big gun was experimented with; a 2 1/2-centimeter revolver-cannon with ten charges was tried at 1000 paces, and 21 and 22 centimeter howitzers, a 15-centimeter rifled mortar and a 9.6-centimeter field-piece were tested. So were the Krupp iron-plated guns. Not long ago the 24-centimeter guns gave some wonderful results. The steel piece, weighing rather less than 18 tons, with a charge of from 132 to 171 pounds of powder, imparted to projectiles weighing from 300 to 352 pounds a muzzle velocity of 2046 feet per second. The 18-ton gun, therefore, proved a more powerful weapon than the French 23-ton or the English 35-ton gun. With a 473-pound shell specially designed for employment against iron armor, and a charge of 165 pounds of powder—the English 35-ton gun takes only 115—a velocity of 1619 feet was obtained, the energy of the shot being 2900 meter-tons, or 161 meter-kilograms for every kilogram of metal in the gun itself. This result aroused the English, and it was officially stated in the Commons that the substitution of breech-loading for muzzle-loading ordnance in the equipment of English turret ships, would be largely dependent on the result of the experiments. England is the only market in which the Essen guns have not been bought, and—the Woolwich cannon being no longer ordered by any foreign state—Sir William Armstrong is Krupp's only competitor for the supply of other countries. That the present trials have been conclusive appears from a London telegram, in which it was said that the shell guns had proved equal in penetration to Woolwich guns of twice their weight, and that the other deductions showed that "the whole English ordnance system required reform."

The new Krupp gun is the largest piece of steel ordnance ever made. It weighs 72 tons and has a caliber of 40 centimeters (15 3/4 inches), a bore of 28 feet 6 inches and a length of 32 feet 8 inches. The English 80-ton gun is 27 feet long, with 24 feet bore and 16 inches caliber, so that the Krupp gun is superior in length of bore by nearly 22 calibers to 18. The material throughout is of steel. The core of the gun is a tube running its entire length, as in the Woolwich gun, but open at the rear, the loading being at the breech. The tube has been made in two portions with a peculiar joint; as no sectional drawings are given, the method of building is not discoverable except by cutting the gun to pieces. Over the tube are four jackets of various length, supplemented by a ring over the breech portion. The gun is chambered, and the form given to the powder prisms and the adjustment of the cartridge allows 40 per cent. of air to the powder actually composing the charge. The gun is rifled on the polygroove system, with a uniform twist, and the shot is rotated by means of a copper ring let into its circumference near the base; this ring also acts as a gas check. The closing of the breech is effected by means of a sliding wedge, rounded at the back into the form of the letter D, which passes across the bore and is there fixed; the gun cannot be fired till the breech is effectually closed. The charge of the gun is 385 pounds of prismatic powder, and the projectile a chilled iron shell of 1662 pounds, with a bursting charge of 22 pounds of powder. The velocity of the projectile was estimated at 1640 feet per second as it leaves the muzzle (or an energy of very

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nearly 31,000 foot tons), at 1565 feet at 547 yards, at 1502 feet at twice that distance, 1443 at thrice, 1391 at four times, 1345 at 2734 yards (2500 meters). If the gun were fired with its axis raised to an angle of 43 degrees with the horizon, it would throw a shell 15 miles. It is worth mentioning that at the Meppen trials the target was too far off to be seen. At the recent trial of the 100-ton gun in England the velocity attained was 1590 feet. That weapon is of 17½-inch caliber and 33 feet bore, its total length being 36 feet, and it throws a 2010-pound projectile with 440 pounds of powder. The Italian iron-clad Duilio and Dandolo will each carry two of the Armstrong 100-ton muzzle-loaders. Next to Krupp's 72-ton gun the largest steel cannon are those of 56 tons at Cronstadt and Constantinople.

The Opening of Coal Mines in China.

The *Shen Pao* publishes a report on some coal mines in the neighborhood of Ching-men-Chow, not far from Ichang. The report is written by a mandarin who was sent to make an inspection, and was evidently accompanied by a foreign expert. Boring operations, says the report, were commenced late last autumn. The coal-producing country appears to cover an extent of 75 square English miles, 15 long by 5 broad. There are 10 layers of coal one above the other. The bed in Wotzkow is estimated to be 500 English acres; that at San-li-kang to be one-fourth its size. It is supposed that 1,200,000 tons of coal can be raised from Wotzkow, and 800,000 from San-li-kang, at the rate of 40,000 tons a year. The supply thus would last at least 40 years. It is highly probable that further explorations will bring to light fresh beds, as these discoveries are the result of merely the first investigations. It should be mentioned that a few small mines have been opened by the people living in the district, but they have not penetrated to the level of the best coal or largest seams. The bed at Wotzkow is 100 feet below the surface. The coal is just the same as the best American anthracite that is brought to China. Anthracite is a most useful kind of coal, being free from sulphur and without any impurities. It gives out great heat and can be used economically and successfully for smelting iron or other metals. It is also suitable for use on board steamers, particularly when mixed with soft coal. As affording much heat, with but little smoke, it commands a high price for household purposes. A small proportion only of the coal throughout the world is good enough for smelting, and any foreign country possessing coal of as good quality as that at Wotzkow, would be content to carry it hundreds of miles to its smelting furnaces. Specimens of this and of all the native and foreign coal procurable in China have been analyzed together, and the new coal has shown itself superior to all for smelting purposes. The province of Hupei possesses several mines containing iron of excellent quality. If these are worked in connection with the coal mines, large profits should be obtained, and if the example be followed in other provinces, a source of wealth to the whole country will be opened up.—*Shanghai Courier*.

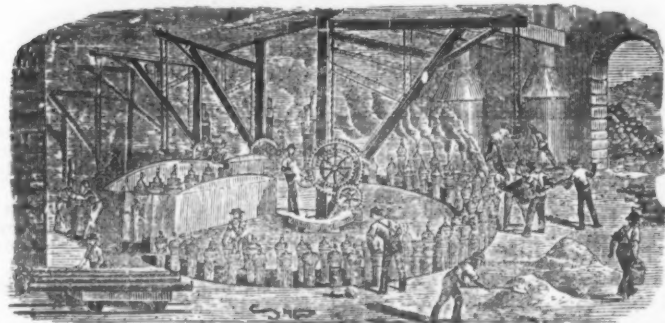
Cheapening Fire-Proof Buildings.

Experience has shown that supposed fire-proof floors, supported on brick arches springing from iron beams, fail to stand the intensity of a great conflagration, the beams warping and springing, the arches crumbling to pieces and allowing the floors to fall. In the buildings where corrugated iron ceilings are used, the arches remain almost uninjured by fire, and require little more than painting to put them in good condition again. The arch of corrugated iron formerly made rested upon iron girders, which, although they did not require to be as heavy as the girders for supporting brick arches, were nevertheless heavy and costly, and this expensiveness prevented the introduction of the corrugated iron ceilings into many classes of buildings, in which they certainly would have been used but for the cost. That objection has now been obviated, and the cost of construction of these ceilings and floors largely reduced, by substituting for the rolled iron beams perfectly protected wooden beams, the exposed parts of which are inclosed in a casing of mortar and a sheathing of iron. The improved ceiling has received the indorsement of the architects of Chicago in a public meeting, at which it was stated that the cost of these new ceilings having wooden beams, corrugated arches and mortar or concrete filling, was but little more than for the ordinary finish of wooden ceilings for store-rooms. The sheathed or cased beams cost only one-ninth as much as the iron beams, even at the present low rates for iron. The object of fire-proof construction is to confine a fire to the room in which it originates, but, as the Chicago and other large conflagrations have demonstrated, a fire-proof building may be destroyed by a fire exterior to it, or one which develops enough heat to crumble stone and brickwork. In other words, fire-proof construction must be generally introduced before it can avert the dangers of such sweeping conflagrations as those of Chicago and Boston; hence the importance of any improvement cheapening the cost of fire-proof ceilings and floors, and making them available in all classes of buildings.

A recent issue of *Iron* contains the following significant item: "The extent to which the adulteration of cloth is practiced, received a noteworthy illustration in the Skepton County Court lately, where a claim for work done in sizing warps was opposed on the ground that the plaintiff had been ordered to put from 100 to 115 per cent. 'weight' into them, and had not complied. The Judge rated the defendant soundly, compared the action to one brought by one highwayman against another to recover his share of the booty, and declared that there was very little honest stuff in the country except that which came from America." If any American newspaper had said that English cotton goods were sometimes made up 100 to 115 per cent. of clay and other make-weights added, what would the English papers have replied?

McNEALS & ARCHER,

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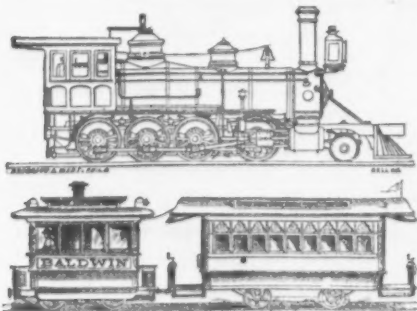
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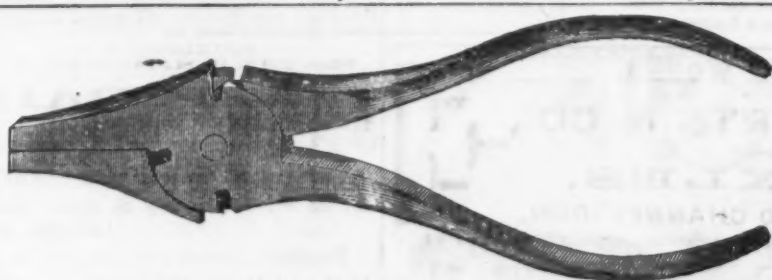
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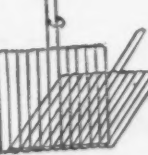
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Tea or Coffee Pot

STAND.

TEA OR COFFEE

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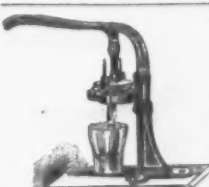


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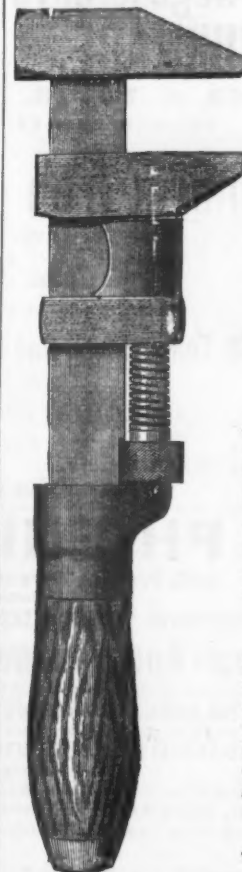
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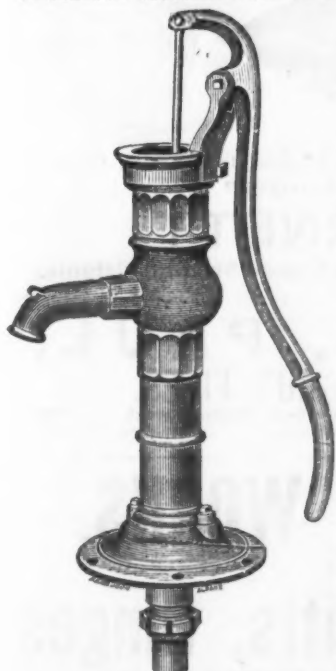
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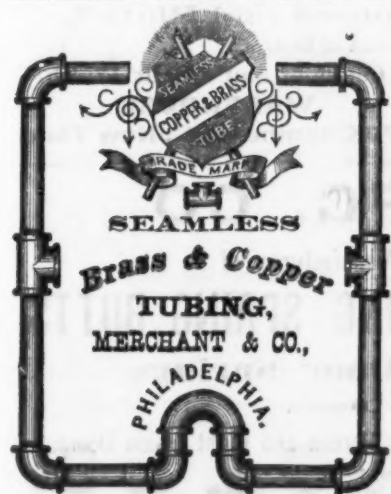
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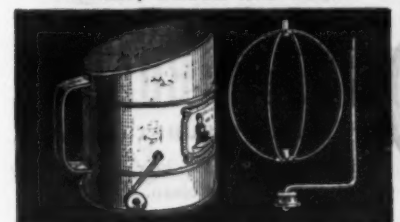


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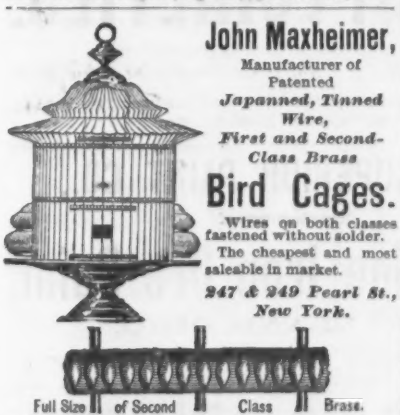
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Hydraulic Machines
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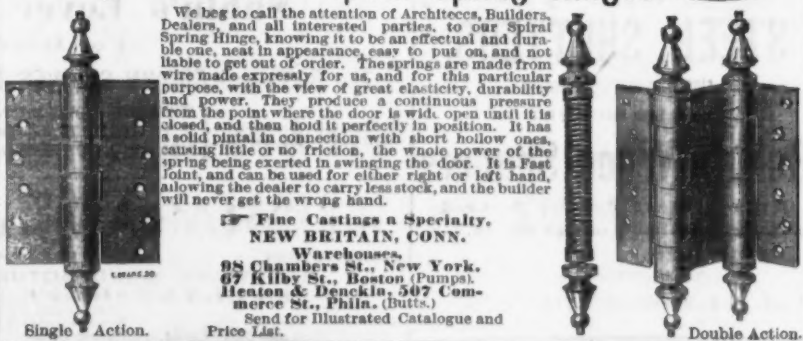
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IRON & BRASS PUMPS.

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Rams, etc., and all with the most modern improvements.

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Single Action. Double Action.



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SASH LOCK,
No. 12,
EXTRA HEAVY.

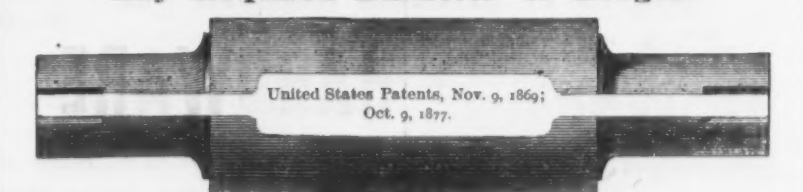
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of the severest tests in practical use in eighty-five different iron and steel works, it is admitted that the
HOLLOW CHILLED ROLLS keep their surface and give a superior finish to the product.

Messrs. Totten & Co., Pittsburgh, Pa., Gentlemen: Having had two pairs of your Hollow Chilled
Rolls in use during the last eighteen months in our plate train, we have no hesitation in expressing
our satisfaction with them and with the character of the work they have performed.
We think the principle upon which they are made is the correct one, and find, after severe trial, that
they carry a good surface for a considerably longer time than the ordinary chilled roll; are less liable
to checks, and the expansion and contraction is much more uniform and gradual throughout the entire
body of the roll, all of which tend to make the gauge of the plates more equal. Our roller, a very
competent one, says they are the best rolls he has ever worked at, preferring them to any other make.
Whenever we have occasion to order any more Chilled Rolls we shall be pleased to give you our
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Per Geo. E. CLYMAN, Vice-President.

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The Inventor of the Blanchard Lathe.

A brief biography of Thomas Blanchard, the inventor of the mechanical combination for turning irregular forms, who died at Boston in 1865, has just been issued. The writer, Asa H. Waters, says that although the name of Thomas Blanchard is not so popularly known as many others who have achieved fame from single inventions, the writer boldly asserts that "it may be questioned whether another inventor can be named in this country or in Europe, during the last century, who has produced so many different labor-saving machines, applicable to such a great variety of uses, and which have contributed so largely to the common necessities, comforts and economies of life." Blanchard was a native of Sutton, Mass., and was born June 24, 1788. His father, Samuel, was a farmer, and lived on a poor, remote strip of land where there was absolutely nothing to suggest a mechanical motion. While on the farm Thomas gave little if any promise of the latent powers within him. There was nothing in his surroundings to excite them. He was misplaced; schools were remote, and he seldom attended, for he was afflicted with a perverse impediment of speech, so that the boys called him "Stammering Tom." At the age of eighteen he was engaged by his older brother, Stephen, to assist him in his tack mill, which he had just started in West Millbury. Young Thomas's duty it was to head the tacks in a vice, with a hand hammer one by one. Once in a mechanic shop, his dormant genius began to wake up. Ere he had spent many months heading tacks one by one, he had designed, constructed and put in operation a machine which would cut and head them at one motion twice as fast as the ticking of a watch, and better finished than those made by hand. So perfect was it in design and construction that it was continued in use for more than 20 years.

The reputation of the boy's success in his brother's tack factory led Mr. Asa Waters, who had in the same town of Millbury an armory where he manufactured arms for the government, to send for the budding inventor, and there young Blanchard, at almost a glance at the old processes for shaping gun barrels, suggested an improvement by which the irregular butt of the barrel could be turned by machinery, and afterward produced a machine for turning out the gun-stock. The germ of the stocking machine lay in that cam motion, and it was then and there, as he afterward said, that the idea of his world-renowned machine for turning irregular forms first flashed through his mind, although it required some months to elaborate and bring it out. Blanchard was afterward called to the Springfield armory, where his machines were introduced and adopted by the government. His machine for producing irregular forms was applied to a vast number of special purposes. Unlike many other inventions, this was really the discovery of a new principle in mechanics, whereby the machine is made the obedient, faithful servant of man, to work out his designs after any given model, be it round or square, crooked or straight, however irregular, and made to reproduce the original shape exactly every time.

Blanchard realized but little pecuniarily on his patents, for they were so pirated upon that he had to spend many thousands of dollars in defending his rights in the courts. He succeeded in getting an extension of his patent for producing irregular forms, but at the end of the extension he had made practically nothing out of it, and began to think of trying for a second extension; but such a thing was unprecedented, and Blanchard, knowing that great opposition would be made to another renewal, thought he would resort to a little stratagem. He fitted up a machine for turning busts from marble blocks, took it to Washington, obtained plaster casts of the head of Webster, Clay, Calhoun and others, and exhibited the busts in the rotunda of the Capitol. The members were quite astonished when they found that these busts were wrought out by a machine, and that they were more exactly like the originals than any human hand could make them. It produced a great sensation. They all supposed it a new invention. Blanchard said, "No; not a new invention, but a new application of an old one of mine from which I never realized much, and I want the patent renewed." A resolution was introduced in the Senate by Webster to renew it for a term of years, and it was rushed through without delay.

When the news was first proclaimed from Springfield of a machine which turned gun-stocks, mechanics came floating from near and far to see it. Among those attracted were two members of the British Parliament then traveling in this country. When they returned to England they reported the wonderful invention of Blanchard, by whom the Americans were getting greatly in advance of them in gun manufacture, and moved a resolution for the purchase of similar machines. A true John Bull member then arose, and ridiculed them unmercifully for being so badly sold and played upon by the cunning Yankees. "The very idea of turning a gun-stock is absurd on the face of it, as all must know who ever saw one." Finding the resolution would fail, the two members withdrew it and moved for a committee to go to the United States Armory and report upon the facts. The committee came over, examined the workings of the machine, returned and reported the facts to be as at first stated. The doubting Thomas rose and said the Americans might have got up something to work their soft woods, pine and poplar; but it would never stand the test of "our tough English oak and hickory." Upon this, doubting Thomas himself was chosen a committee to go over and examine. He was not to be imposed upon; he would expose this humbug. Selecting three rough stocks of the hardest, toughest timber he could find, he went to the Springfield armory incognito, brought his stocks to the stocking room and inquired of the overseer if he would grant him the favor of turning them. "Certainly, sir; take a seat." Without making the least alteration of the machine, the overseer ran the stocks through in a few minutes, and then went on with his work as though nothing unusual had happened. The Englishman examined the stocks, found they were turned all the better

for being of hard wood, and he was completely dumbfounded. After musing awhile, he frankly confessed who he was, why he came, and his thorough conviction of the utility of the machine. Before he left the city he gave an order in behalf of the British government for this and the accompanying machines, some six or eight, which amounted to some \$40,000. The machines were built at Chicopee, shipped to England, and have been in use there from that day to this.

The Colorado Silver Product.

The Denver (Col.) Times says: There have been so many conjectures and guesses as to the probable yield of silver from Colorado during the current year that a reporter of the Times has been especially detailed to look up this important question, a task that has taken several weeks in its accomplishment, as the yield of the principal mining camp in the State has been carefully estimated from the most reliable data attainable. Several weeks ago the New York Bulletin quoted approvingly the statement of a California paper to the effect that the ores of Leadville were mainly of low grade, carrying not more than 15 per cent. of lead. It fell to the province of the writer to investigate the matter, and a visit was made to the sampling works of Messrs. Eddy & James, in Leadville. Footing up a page of the ore book—the first page at which the book was opened—it was found that the several lots entered thereon gave an average of 127 ounces of silver, carrying 35 per cent. of lead. Other pages were footed up with like result, the average not varying more than an ounce or two in either direction. This gave a basis for the calculation of the value of the output of the camp. At that time—now nearly two months ago—the daily product of the camp was about 330 tons of ore. This was about equally divided between the several smelters and sampling works of the city, so that the record of Messrs. James & Eddy was a fair representative of the average value of all the ores sold. This production was considered by the most careful experts of the camp as about one-third of the actual working capacity of the mines then actually developed, the production of many of which has been prevented by many causes—litigation being the chief. It follows, therefore, that the production of the Leadville mines at that time was in the neighborhood of 40,000 ounces daily—actually mined and reduced to base bullion. This would give a total of 12,000,000 ounces for the year of 300 working days, ending July 1, 1880, worth at the present rate of silver \$13,560,000. It must, however, be remembered that this is but one-third of the present actual working capacity of the mines, and in arriving at a conclusion the probable number of developed mines now lying idle that will be working before the close of the fiscal year must be taken into consideration. It is a low estimate to set down the probable increase in production from this source at 20 per cent. Leaving out the new mines that will probably be producing before the year rolls around, and we have a total of 14,400,000 ounces of silver, having a cash value of \$16,272,000. Taking four years as a basis, we may estimate the yield of the State, outside of Leadville, as, in round numbers, \$8,000,000. This makes the total production of the State about \$24,000,000, of which over two-thirds will be produced in Leadville. The Times believes this to be under rather than over the mark, and while it believes the estimate of a New York correspondent—\$100,000,000—or even the estimate of some of the papers of the State—\$50,000,000—to be extravagant, it has no hesitation in announcing its opinion that, at the close of the current fiscal year, it will be found that the bullion product of the year will be nearer \$30,000,000 than \$20,000,000, an increase that may be regarded with pardonable pride.

A Large Railroad Ferry-boat.—The Baltimore and Ohio Railroad has recently awarded the Harlan & Hollingsworth Co., of Wilmington, Del., the contract of a large ferry-boat to carry trains from the property of the railway at Locust Point to the Philadelphia, Wilmington and Baltimore depot at Canton, near Baltimore. A brief description of the boat and its appointments is as follows: Length, 310 feet; beam, 36 feet 8 inches; height of deck above the water when loaded, 10 feet; draft of water when loaded (without ballast), 5 feet. In order to conform to the various tides the simple expedient of water ballast has been adopted. Four separate tanks with bulkhead partitions will be made, in the bottom of each of which there will be a valve for the introduction of water, and a pump connection with each compartment, leading to a donkey engine on deck, will be supplied in order to discharge the ballast. The compartments being separate, the ease with which the vessel can be raised or lowered is apparent; or either end can be adjusted to suit the ferry slips and drawbridges without affecting the other. The ballast can also be injected or discharged while the boat is moving, thus saving frequent delay. The hull will be of iron, with a view of overcoming any ice obstruction in the harbor during the winter season. Double compound engines will be supplied, having 34-inch cylinders and 9-foot stroke, and will work independent when disconnected, so that an abrupt turn can be made by working one paddle-wheel backward and the other forward, after the manner of the new iceboat, F. C. Latrobe. The wheels will be 22 feet in diameter. The deck will be fitted up with five separate tracks, having a capacity for a freight train of 27 cars, or of nine passenger coaches, while no matter how small the load, the boat can be perfectly ballasted, owing to the arrangement of the tracks. If a locomotive accompanies the train it will, even when the maximum number of cars is taken on the boat, only make a difference of one car. The contract calls for the completion in 150 working days, the price agreed upon approaching \$100,000.

Russian journals announce that at the opening of the Balakhansk Railway, locomotives fired with naphtha, built according to designs of a Mr. Lentz, were put into successful operation.

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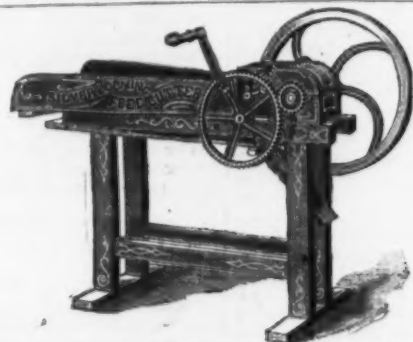

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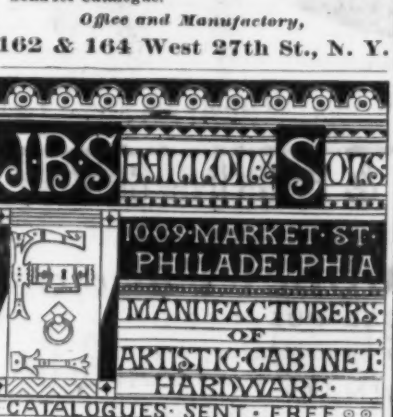
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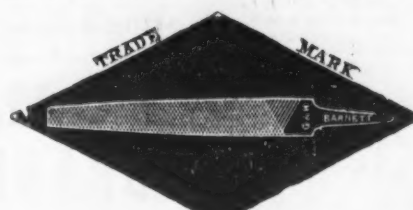
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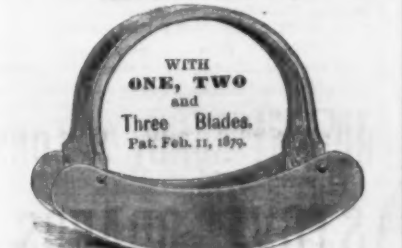
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INDUSTRIAL ITEMS.

MAINE.

The ax and scythe factory of Emerson, Stevens & Co., at West Waterville, which was burned on January 23 of the present year, was rebuilt and in operation again in April. At present the works are wholly run in the production of axes, and their Witherell ax for New England trade, and another pattern known as the Westmore ax for Western trade, are two popular specialties.

MASSACHUSETTS.

The American Watch Company, of Waltham, are testing the merits of a new watch case, so contrived that when the movement is placed in it the works are perfectly water-tight, and the watch may be placed in water for hours without the least injury to it. It also forms a great protection to any injury that is liable to happen to the watch from careless handling or an accidental dropping of it.

A new machine for sawing iron nuts has been invented in Springfield. The nut on which this machine is designed to work is of ordinary iron, but with two slots cut at right angles across the upper surface half as deep as the nut, so that, when it is turned tight upon the bolt, the grip of the wrench closes up the apertures so much that it is impossible for the nut to work loose. The new machine will cut the slots in the red-hot iron as fast as it can be fed. The nuts are placed upon an iron plate in front of the operator, who with one hand pushes them forward till they drop, one by one, into an open box fitted to them, in which they are moved by gauge against a circular saw. A motion of the hand then turns each a quarter of the way round, when it is pushed against a second saw for the other slit. Thus, after the first one is cut into in one direction, two are slotted in the opposite directions by the same forward pressure against the saws. The saws, of soft steel, revolve 3000 times a minute, the periphery traveling nearly four miles per minute, and the iron is sawed into as easily as a piece of wood on an ordinary machine. The machine will easily slot a ton of nuts, averaging 4000 in number, in a day, and can probably be run up to a ton and a half.

C. P. Talbot & Co., of North Billerica, are to build a chamber for the manufacture of vitriol, and have given a large order for heavy sheet lead to be used in its construction.

During the month of July the amount of freight sent from the Franconia Iron Works, of Wareham, was 386 1/2 tons. From the Tremont Nail Company, 1950 tons of merchandise were sent.

The Orange Iron Foundry Company have re-elected their old board of officers, with Rodney Hunt as president, J. W. Wheeler as secretary, and A. J. Clark as treasurer. An English manufacturing firm has ordered three 18-inch "Hercules" turbines of the Holyoke Machine Company, of Holyoke, to use in place of an overshot and breast wheels.

NEW YORK.

The machine shop of Abraham Kipp, situated on the pier at Sing Sing, was entirely consumed by fire on Wednesday of last week. The loss was about \$5000.

PENNSYLVANIA.

The Montgomery Furnace of the Montgomery Iron Company at Port Kennedy is about to be put in blast once more, and it is expected that pig iron will be turned out for delivery during this month. Joseph Storm Patterson, the secretary of the company, has advised Messrs. Justice Cox, Jr., & Co. that they are reappointed sales agents for Philadelphia. The character of the iron made by the Montgomery Iron Company during its last blast will no doubt insure it a favorable reception by the trade.

The Hope Iron Works gives employment to about 70 men, and finds a ready sale for all the iron manufactured. At the foundry of Wm. S. Ellis, adjoining, everything is lively, with orders on hand to last four months. Among the orders is one for the castings of two double puddling furnaces and three sets of boiler settings for the Potts Bros.' limited iron company. At the Philadelphia Bridge Works the carpenters are busy rebuilding the carpenter shop, which had been removed from its old position a short distance west of the main works. At the furnace of the Pottstown Iron Company a large force of workmen are engaged in tearing down the high arches upon which the boilers rested, it being the intention to reset them on the ground. Workmen are also busy upon the furnace stack and various other parts of it, and when the work is completed the furnace will present an entirely different appearance and be fully able to meet the demands likely to be made upon it.

A new combination passenger and baggage car, which is to cost \$1400, has been gotten up by the Beaver Falls Car Works, for the Montour branch of the Pittsburgh and Lake Erie Railroad. A new feature has been introduced in its construction. The trucks are in the form of hollow boxes, within which the cross pieces attached to the bottom of the car work with strong steel springs with a double motion, both up and down, and also with a swinging motion from side to side. This invention will add very much to the pleasure and comfort of traveling by rail, as it will prevent the jerking motion which is now experienced when turning a curve, and instead will give the car an easy swinging motion.

The Diamond Drill Company has received a number of new and important orders from Australia.

The Wheeler Iron Company's blast furnace, West Middlesex, will go in about the last week in August. Its size is 30 feet in height, 13 feet in the diameter of the boshes, 6 feet 6 inches in bottom of hearth, and 7 feet at the tuyeres, bell and hopper and closed front. When it goes in, it will make 13 furnaces in blast in the Shenango Valley. The large furnace of the Reading Iron Company has been put in blast. It has been remodeled, relined, hot blast extended and other improvements made. The bosh is 16 feet in diameter and the height of furnace is 55 feet. It is expected that about 200 tons of No. 1 iron will be turned out of this furnace per week. This furnace was built about a quarter century ago.

Application will be made Sept. 1st for a charter of incorporation for the Allentown Nail and Iron Company, for the manufacture of nails, iron or steel, or both, in any merchantable form, with a capital stock of \$250,000.

The fires were started up Thursday, the 13th, in one of the boilers at the Eames Petroleum Iron Works, Titusville, and the smaller engine was run at 74 revolutions per minute for two hours. Water was pumped into the water tanks, and various parts of the machinery were tested. Everything, so far as the tests went, proved satisfactory, and the proprietors expect soon to be in regular running order.

It is highly probable that the bloom mill attached to the Stewart Iron Company's works in this place will be running within the next 60 days, if indeed it does not go into operation within a fortnight. The mill is admirably adapted to the manufacture of muck bar, and is in excellent repair.

PITTSBURGH AND VICINITY.

The cutlery works, Beaver Falls, are running 12 hours a day and are turning out more work per week than ever before in the history of this establishment, averaging 140 gross of all kinds per day. They are shipping large quantities to the Territories and California, while their home trade is steadily increasing.

More than one-half of the glass used in the United States is produced in Pittsburgh, where over 5000 hands are employed in making it: 12,110 tons of soda ash were used in the business during last year, and the value of the glassware amounted to nearly \$7,000,000.

Concerning Pittsburgh glass houses we gather the following items: E. D. Dithridge's glass works (limited), Southside, will start the 25th, after having been idle about eight weeks. The Fort Pitt Glass Works will start on or about September 1st, on pressed ware and lamp chimneys. They have been idle about two months. The Excelsior Glass Works, which has been idle about six weeks, will start up about the first of September next. The Keystone Glass Works is running full time, employing about 30 shops on oil-finished chimneys. Four new shops were put on a few weeks ago.

Hansen & Co.'s window glass factory, which has been blocked for several days on account of the action of the Union restricting their men from working through July and August, has started again.

Two skilled workmen have left Pittsburgh for the United States of Colombia. The firm of Porter, Bell & Co. ship by the same steamer a 14-ton narrow-gauge engine for a new railroad in the upland region of that country. One will run the locomotive and the other will have charge of the machinery belonging to the railroad company.

Since the large steel shaft for the tow-boat Harry Brown, which was made by Krupp, arrived in this city it has attracted considerable attention among steel manufacturers. The shaft was made from a single ingot. It is proposed to erect furnaces here capable of making ingots weighing 16 tons.

Graff, Bennett & Co. have taken possession of the works lately occupied by Reese, Graff & Woods, and will commence work about the middle of the week. When this is in operation there will be but three idle mills in Pittsburgh. One of these is very old and out of repair, and there are rumors that the other two will start soon.

The Penn Bridge Works, Beaver Falls, have been awarded the contract for putting up five iron bridges in Frederick County, Md., and two in Canton, St. Lawrence County, N. Y. They are now building one in Iowa, the third one put up by them in that State the present year.

The contract for the steel for the Niagara suspension bridge was awarded partly to Hussey, Howe & Co., and partly to Cornebie Brothers & Co. The floor beams for the bridge are to be 15-inch I beams of 150 pounds to the yard. Part of Cornebie Bros. & Co.'s order consists of 6-inch channel bars, which will be made of Bessemer steel from the Edgar Thomson Steel Works.

During the past six months, Hillard and Steutits foundry on Duquesne Way has been very busy, running under a constant pressure of fully 100 tons of regular orders for railway rolling mill and machinery castings for immediate delivery, and in addition to their contracts for future shipments, and since the recent activity in iron, their orders have increased very perceptibly. They have just completed and forwarded one contract for 300 tons of rolling mill plant, and are on the eve of consigning 50 tons of retorts, stills and evaporating pans to equip a wood acid manufactory in the Eastern part of the State.

MARYLAND.

The Cumberland News says: While a gentleman of this city was in Pittsburgh recently, some steel manufacturers of that place stated to him in the course of conversation that they would be glad to take hold of and run the works here, provided satisfactory terms could be made with the owners of the works. The gentleman communicated the facts to the managers of the steel works, and they now have the matter under consideration and will probably in a few days invite the Pittsburgh men to submit a proposition.

WEST VIRGINIA.

Hobbs, Brockunier & Co., Wheeling, will start their new gas furnace about the last week of the present month. This will make three furnaces in operation at these works on table ware.

The Central glass works, Wheeling, shut down one furnace for repairs a short time ago, and will restart it as soon as the repairs are completed.

OHIO.

Messrs. Cartwright, McCurdy & Co., of Youngstown, have leased the Falcon Iron Works, of Niles, and started up on Monday, the 4th inst.

The Lake Erie Iron Company, of Cleveland, are not using the Adams direct process, as has been stated in some of the papers.

The leading rake manufacturers of New York, Pennsylvania, Ohio, Indiana and Illinois met in annual convention in the Weddell House parlors, at Cleveland, on Tuesday, the 12th inst. The principal object sought to be gained by this session was the estab-

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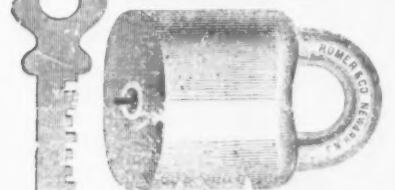
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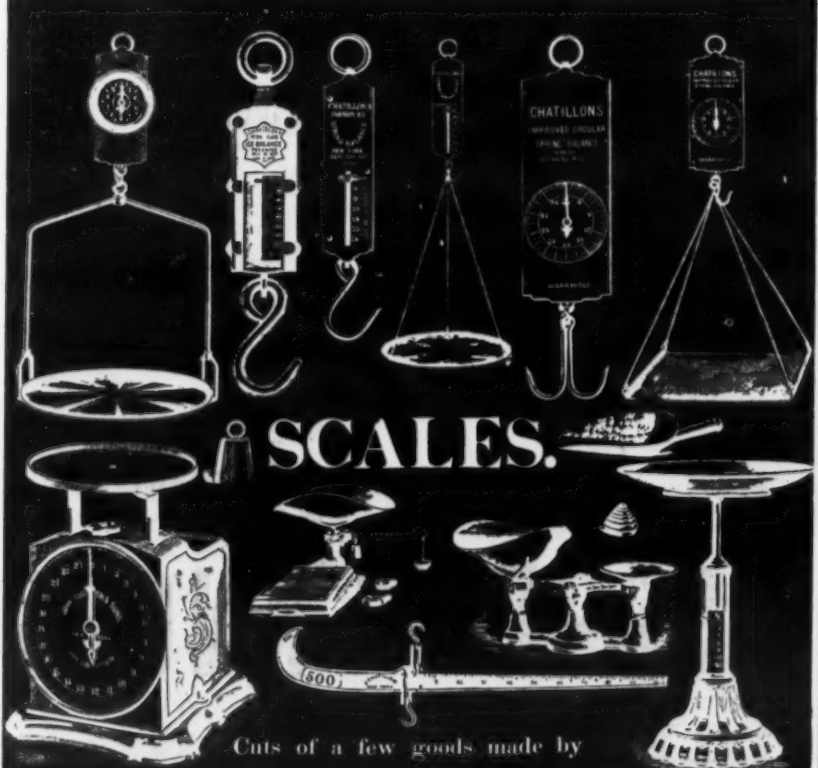
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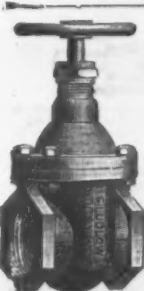
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ishment of a better understanding in regard to prices for the different classes of work during the coming year. They completed the work laid out and adjourned in the evening.

The Steubenville blast furnace and coal works were sold by the sheriff on Tuesday, the 12th inst., to Hon. R. Sherrard for \$60,000. W. P. Hays, representing Mr. Slagle, of Nimick & Co., Pittsburgh, bid as high as \$54,350, but no higher. The amount realized is 20 per cent. more than was bid some weeks since, a fact that shows the advance in iron property.

Belfont Nail Mill is to stop for a couple of weeks, during which time some necessary repairs will be made. The three heating furnaces will be replaced with new ones, which will have iron stacks instead of the ordinary brick ones.

Sarah Furnace blew in on the 11th.

INDIANA.

The Evansville Rolling Mills, at Evansville, which six years ago cost \$350,000, and have been closed for five years, have been sold to A. B. Meeker, of the Evansville and Chicago Railroad, for \$50,000.

The Ohio Falls Iron Works last week turned out 182 tons of finished iron, all sold. This was not sufficient to meet the demands upon the mill, and its stock in warehouse has to be drawn upon daily to a large extent. The puddlers at this mill are kept busy day and night.

After lying idle for three years from lack of demand, the puddling furnaces of the New Albany Rail Mill will be put in operation, giving employment to a large additional force of hands. Last week offers of two contracts, one for 5000 tons and the other for 3000 tons of rails, were refused. The Atchison, Topeka and Santa Fe road made the offer for the 5000 tons contract. This mill is now shipping daily 66 tons of finished rails to the Kansas Pacific road, besides supplying other roads with which it has contracts.

IOWA.

The new glass works in Dubuque will be ready to make glass about the middle of September. This is a press-house and chimney factory.

MISSOURI.

Nothing is yet definitely known concerning the establishment of zinc works in this city—or, rather, as to the time of their erection—but it is the opinion of those interested, and therefore best qualified to speak, that the erection of zinc works in Joplin is something inevitable. If nothing is done this year, the works will certainly be erected next season. The fact that this section produces more zinc ore than any other point in the United States, together with the advantages of cheap and abundant fuel and unexcelled railroad facilities, is bound to bring into our midst the capital and experience to take advantage of such favorable conditions. The Illinois companies begin to realize that they would be placed at a very great disadvantage, and would be shut off from a large part of their ore supplies by such a movement, and even they are contemplating stepping in and taking the "bull by the horns," in order to control the business of which they are the head and front in this country. So far as Joplin is concerned, it matters little who puts up these works. We want the zinc works, and the company who supply this want will be received with open arms, and extended every inducement and encouragement that any community can offer.—Joplin Mining News, Aug. 15.

KENTUCKY.

The Iron Hills Furnace is running on part limestone and top hill kidney ore, and part selected Lambert ore; the former costs \$2.25 per ton delivered at the furnace, the latter \$1.30. The iron is of excellent No. 1 and No. 2 foundry grade, and averages at this writing from 10 to 12 tons.

Mt. Savage Furnace is making an average of 13 tons of No. 1 foundry iron, and will complete her 2500 tons blast before the middle or end of January, when the lease of the present lessees, the Mt. Savage Furnace Company, expires; \$2.25 per ton is paid for choice iron ore.

MINNESOTA.

In a recent article concerning the Island Power Company we made the mistake of locating its operations at St. Paul instead of Minneapolis.

MICHIGAN.

The following, from the Marquette Mining Journal, is a statement of ore and pig iron shipments by lake for the season of 1879, up to and including Wednesday, Aug. 6:

MARQUETTE.	
	Gross tons.
Mine.....	7,478
McComber.....	3,441
Manganese.....	250
Rolling Mill.....	47,983
Cleveland.....	55,668
Lake Superior.....	8,840
Winthrop.....	10,330
Humboldt.....	4,252
Edwards.....	78,246
Republic.....	54,282
Champion.....	813
Albion.....	201
Marquette.....	260,389
Total ore from Marquette.....	1,188,973
L'ANNE.	
Michigan.....	408
Spurr.....	19,380
Total.....	19,788
PIG IRON.	
Carp Furnace.....	2,727
Pioneer Furnace.....	1,853
Total pig iron.....	4,580
QUARTZ.	
Carp River Iron Co.....	1,434
Ore to local points.....	17,319
Total ore, pig iron and quartz over M., H. & O. Railroad.....	312,102
ESCANABA.	
Angeline, Specular.....	10,186
Angeline, Hematite.....	1,756
Barum.....	11,783
Bessemer.....	6,733
Curry.....	3,720
Cambria.....	2,497
Cheshire.....	8,649
Cleveland.....	6,659
Cleveland Hematite.....	7,680
Cyclops.....	13,836
Edwards.....	393
Emmett.....	8,433
Goodrich.....	2,644
Jackson.....	34,157
S. Jackson.....	9,444
Section 19.....	2,348
McComber.....	4,444
Quartz.....	589
Michigan.....	10,455

Mitchell.....	4,992
National.....	13,771
New York.....	33,707
Norway.....	16,016
Palmer.....	13,514
Quinnesec.....	11,728
Saginaw.....	24,267
Salisbury.....	18,552
Superior, Hard.....	17,784
Superior, Hematite.....	289
Vulcan.....	8,466
Winthrop.....	2,337
Saginaw Sec. 4.....	1,216
Foster.....	644

Total.....313,513

The total lake shipments from the Menominee range mines up to and including Aug. 6 were:

	Gross tons.
Curry.....	3,720
Cyclops.....	13,836
Emmett.....	8,433
Norway.....	16,016
Quinnesec.....	11,728
Vulcan.....	8,466
Saginaw, Sec. 4.....	1,216

Total.....63,415

As compared with a total output of 33,827 tons during a corresponding period last year.

LABOR AND WAGES.

The Montour American says the iron works in Danville are in full operation, same as the like industries in other parts of the State. The long night of depression which has affected the commercial world for years past is giving place to the clearer light of a more substantial prosperity than this country has experienced for many a year. The price of iron and steel is advancing, and the wages of men in like manner. It is a good sign for the future that men employed are not so susceptible to the arts of the demagogue as they were when the sad cry of "no work" discouraged them. They now make good living wages and have a prospect of an improving condition of things, and are contented.

The Belmont Mill (Wheeling) directors have passed an order that any man leaving his work to go to a saloon would be discharged immediately, officer or employee. This order was ordered to be posted in the office of the mill and in the mill. Another example of the tyranny of capital.

The Hollidaysburg Iron and Nail Company advanced the wages of puddlers 50 cents per ton on the 18th. Hereafter they will receive \$4 per ton instead of \$3.50.

At Danville, Ill., there is a strike of the coal miners.

B. F. Morret, of the Schuylkill steam forge at Douglassville, Pa., have put on the third turn of hands.

Owing to the scarcity of good puddlers, the new rolling mill at Palo Alto cannot be started as soon as was expected. A number of puddlers could be engaged in Pottsville if better wages were paid; but they refuse to work at the present rates. At \$3.25 per ton the puddler can make about \$2 per day and his helper about \$1.25; consequently those of the men who can find other employment refuse to puddle.—Miners' Journal.

Glassblowers at Williamstown, Glassboro and Clayton factories, N. J., are still on a strike. The owners have put out all the fires and say they will not pay the increase demanded.

A prominent citizen of North Adams, Mass., gives it as the result of close observation that at no time within the past five years has labor been so generally employed and at so high wages, compared with the cost of living, rents, &c., as now. All the manufacturing interests are on full time, and have plenty of orders.

The striking miners of the Hudson Iron Company at West Stockbridge have returned to work.

The Reading Coal and Iron Company are said not to have ceased mining a day this year, and the probability is that the work will go on without intermission during the balance of the year. Although the profits are pronounced small, steady production is considered more advantageous to the company than occasional delays with the hope of a rise in the prices.

It is said that there are 50,000 more workmen employed in Pennsylvania this summer than last.

Mr. D. R. Jones, secretary of the Miners' Arbitration Committee, has issued the following call: A delegate convention of the miners of Western Pennsylvania will be held at Pittsburgh on Wednesday, the 27th day of August, 1879, to discuss and determine questions of vital importance to the life interests of the miners, and to the peace and prosperity of Allegheny and neighboring counties during the coming fall and spring. Each pit on river and railroad to have one duly accredited delegate.

The wages of the puddlers at the Reading Iron Works were advanced on the 16th inst. 25 cents per ton; heaters, rollers and shinglers 10 per cent. advance.

Beginning with Monday, August 18, the wages of the puddlers at the plate mills of the Pottstown Iron Co. have been increased from \$3.25 to \$3.60 per ton.

The Hope Iron Company, Limited, have given their men notice of an increase of wages, to begin on the 18th, the puddlers' increase being from \$3.25 a ton to \$3.75.

The report that the Reading Hardware Company have offered their striking molders 15 per cent. and a price list is denied. The men formerly employed by them were paid off five weeks ago and discharged, and the works have been running every day and evening for the past four weeks. It is not the intention of the company to employ any of the strikers again, as they can get all they have any use for without them. When the men struck they were receiving from \$10 to \$15 per week of six days, fully as much as the same class of workmen can make in any place in which the cost of living is as low.

The local strikes among the coal miners at Wadesville and Glen Carbon have ended in unconditional surrender, having received no encouragement from the rest of the region.

There has recently been some dissatisfaction among the workers in the glass houses in Southern New Jersey. The men demanded an advance amounting to about 8 per cent. over the wages paid last year, and also wanted the manufacturers to bind themselves for 12 months. To this de-

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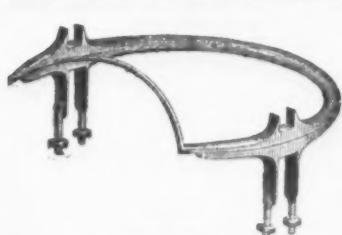
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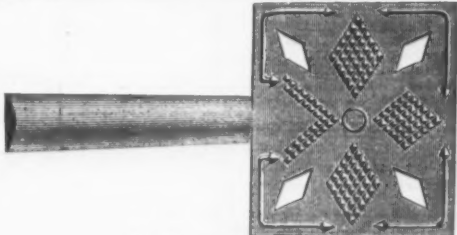
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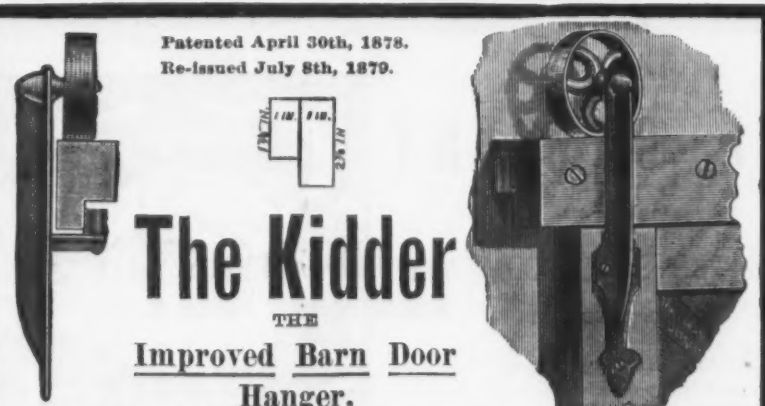


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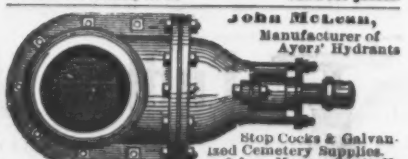
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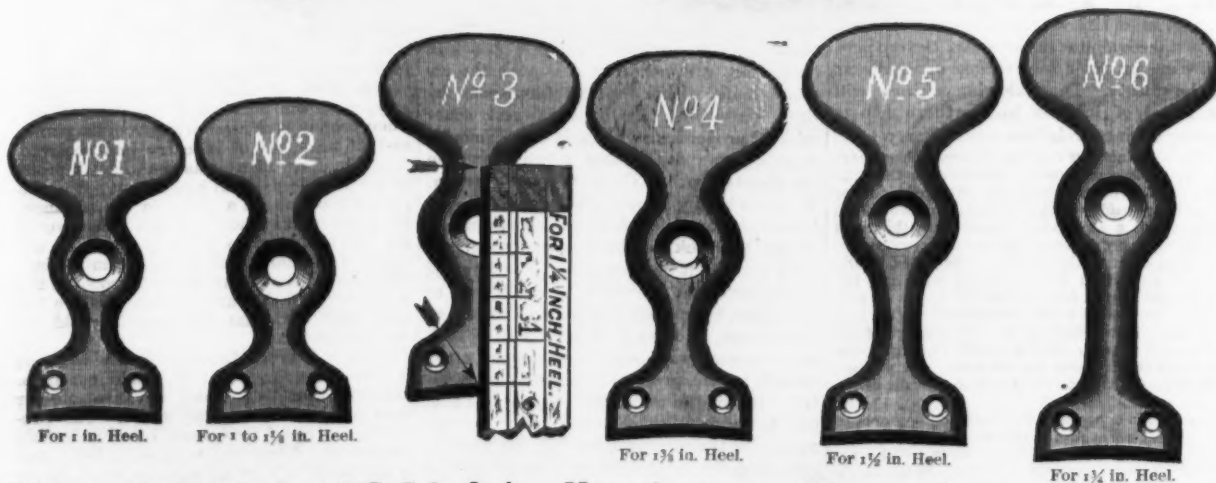
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mand the manufacturers refused to accede, and on July 5 put out their furnaces. The hollow-ware blowers, it is said, are earning from \$65 to \$700 per month per man, according to the ability of the workman, and are working seven, and never over eight hours per day. The manufacturers claim to have lost money for the past three years. This discord among the workmen seems to be traced directly to the teachings of an organization known as the "Knights of Labor."

METALLURGICAL NOTES.

PHOSPHORUS AND THE PHYSICAL PROPERTIES OF STEEL.

The Terrenore Company, whose researches on the effect of impurities upon the physical properties of steel have done so much to elicit information, made a series of casts from an open-hearth furnace to illustrate, for the Paris Exhibition, the effect of phosphorus upon steel. Manganese and carbon were varied as little as possible, while the phosphorus was made to fluctuate between 0.247 and 0.398 per cent. The following analyses show the composition of the steel, which contained only traces of silicon and sulphur:

Casting No.	Phos.	Mang.	Car.
41	0.247	0.746	0.310
35	0.273	0.800	0.274
45	0.398	0.693	0.310

A series of mechanical tests were made to show the quality of the metal, and at the same time to observe the effect of hardening in oil after being hammered and rolled. Bars 3.937 inches square and 3.937 feet long were submitted to bending test in a hydraulic machine, the distance between supports being 3.2809 feet. The results obtained were the following:

Table 1.—Bending Tests.

No. of cast	Phos.	Mang.	Car.
41	0.247	0.746	0.310
35	0.273	0.800	0.274
45	0.398	0.693	0.310

Load, lbs.	Deflection, in.	Deflection, in.	Deflection, in.
22,047	0.016	0.012	0.004
33,070	0.031	0.027	0.010
44,099	0.079	0.071	0.059
55,117	0.114	0.102	0.094
66,141	0.157	0.150	0.104
88,188	0.250	0.247	0.204
110,235	0.353	0.353	0.304
132,282	0.441	0.441	0.404
154,329	0.535	0.535	0.504
176,376	0.639	0.639	0.604
Fracture at	108,423 lbs.	143,392 lbs.	101,416 lbs.

The following table gives the results of drop tests made with the same material, the distance between supports being 3.2809 feet, and the weight dropped being 661.41 pounds. In this case also ordinary steel and metal hardened in oil were submitted to the test:

Table 2.—Drop Tests.

No. of casting	Phos.	Mang.	Car.
41	0.247	0.746	0.310
35	0.273	0.800	0.274
45	0.398	0.693	0.310

The tests plainly show the relation between the percentage of phosphorus and the physical properties of the steel, which are more fully revealed in the following table, which gives the results of tests for tensile strength:

Table 3.—Tensile Tests.

No. of casting	Phos.	Mang.	Car.
41	0.247	0.746	0.310
35	0.273	0.800	0.274
45	0.398	0.693	0.310

It will be noticed, is increased, and with it the tensile strength. The decrease of ductility, as shown by the tensile tests, is not great. It is more clearly brought out in the drop tests, the point of fracture being considerably lower. The presence of larger amounts of phosphorus appears to increase the effect of hardening. The tests of compression after hardening the metal in oil are remarkable.

COMPOSITION OF THE GASES ISSUING FROM THE BESSEMER CONVERTER.

Under the auspices of the Swedish Jern Kontoret, Dr. Ad. Tamm made a series of experiments at the well-known Sandviken works to determine the composition of the gases issuing from the Bessemer converter. The diameter of the vessel bottom was 4.38 feet, while 2.04 feet above it the diameter was 5.79 feet. As it held only 7055 pounds, the depth of metal can only have been 11.81 inches. The blowing was continued for six minutes through 90 tuyere openings. During blow No. 1519 two samples were taken. The operations lasted 5 to 7 1/4 minutes, the pressure being equivalent to 2.126-inch of quicksilver. The following are the results obtained by analysis of the pig and the steel made:

No.		Grav. Carb.	Com. Carb.	Si.	P.	S.	Mn.
1519	Pig.....	3.77	0.55	0.841	0.016	0.02	0.809
	Steel.....		0.25	0.093	0.010	0.02	0.072
1521	Pig.....	3.65	0.60	0.894	0.015	0.02	0.749
	Steel.....		0.06	0.093	0.015	0.02	0.065
1523	Pig.....	3.96	0.45	0.912	0.016	0.02	0.775
	Steel.....		0.06	0.035	0.016	0.02	0.073
1524	Pig.....	3.79	0.55	0.891	0.016	0.02	0.772
	Steel.....		0.06	0.018	0.020	0.02	0.055

The following table gives the results of the analyses of the gases in per cent. of weight, the first column giving the No. of blow, the second (II) the total time consumed in blowing, the third (III) the time of taking sample after beginning of blow:

No.	II	III	O	CO ₂	CO	H	N
1510, a...	6	1 1/4-2 1/4	0.00	11.04	23.70	0.08	65.13
1519, b...	6	3-5 1/4	0.39	6.44	25.49	0.09	67.49
1521, a...	7 1/4	3-4 1/4	0.00	9.93	25.18	0.07	63.82
1521, b...	7 1/4	3-4 1/4	0.00	7.57	27.68	0.09	64.85
1522, a...	6	3-4	0.00	8.32	26.55	0.05	64.88
1523, a...	6 1/2	3 1/4-6	0.00	5.00	26.50	0.07	68.43
1524, a...	5 1/2	2 1/4-3 1/4	0.14	7.54	28.41	0.12	63.69
1524, b...	5 1/2	4 1/4-5 1/4	0.20	5.59	22.68	0.05	71.28

In the following table column I gives the percentage, by weight, of the oxygen contained in 100 parts of air blown in, column II the carbon, and III the oxygen recovered in the escaping gases, while in the column N the amount of oxygen absorbed by the slag, and V the amount of oxygen drawn from the slag, is given:

I	II	III	N	V
23.05	15.59	25.42	...	1.47
24.01	14.41	22.32	1.69	...
23.87	16.95	20.70	...	2.83
24.04	16.60	25.43	...	1.41
23.67	16.28	25.30	...	1.03
23.62	14.28	21.68	3.74	...
24.35	17.21	25.43	...	2.08
23.02	19.21	20.13	3.49	...

A PRIMITIVE HOLLOWAY PROCESS IN JAPAN.

A correspondent of *Engineering*, who, as lecturer on metallurgy at Tokio, has had a good opportunity to study native metallurgical processes in Japan, describes a method of copper smelting at Setsu, near Osaka, which in principle resembles Holloway's process. The furnaces used are of the usual Japanese type, namely: A hole about 9 inches deep and 18 by 16 inches at the surface, lined with a mixture of charcoal powder and clay. The roasted ore is first melted down in about four hours by the application of blast introduced through two bellows entering just below the upper edge. The slag formed is removed, while the matte is allowed to accumulate until a sufficient quantity has been obtained. The second period, the object of which is similar to Holloway's method, then begins. The fire is thrown back, the back bellows stopped and one bellows brought to the front and a tuyere attached, pointing downward at an angle of about 75 degrees with the surface of the molten matte, which is oxidized and reduced to copper, the heat produced keeping the whole perfectly liquid. Little slag is made, and at the end of three hours blowing a thin skin of matte is removed previous to ladling out the copper. A hundredweight at a time is produced.

THE LOSS OF SILVER IN CUPELLATION.

It is quite a general belief among metallurgists that the cupellation of silver lead on a large scale is invariably connected with a considerable loss of the precious metal, especially if the large German furnace be used. Mr. W. Ohl, of the Braubach Works, on the Rhine, Germany, has made a series of assays to determine the question. He took the precaution of melting down the rich lead in a large kettle, skimming it, and after stirring taking six samples, which, as they all closely agreed, showed that the sample was a true one. The dross skimmed off was sampled and assayed separately, and was afterward added during the cupelling after the formation of litharge. All the products were weighed and assayed for silver and gold. The results from 16,762 kilograms rich lead and 1544 kilograms dross, containing 166,544 kilograms silver and 1197 kilograms gold, were the following:

Kilograms	Kilo. Silver	Kilo. Gold
153,944 silver, holding	152,013	1,143
800 dross, "	1,025	0.018
2,700 bottom, "	4,826	0.020
200 rich bottom, holding	4,525	0.015
16,762 litharge	4,125	...
20,354 products	166,514	1,196

Deducting this from the figures given above, we have:

Loss of silver	0.031 kilograms = 0.018 per cent.
" gold	0.001 " = 0.001 "

This loss, it will be seen, is far from coming up to some of the estimates which we have seen, reaching as much as 2 to 3 per cent. The silver was 994 fine, which is as pure as it is necessary to make it, as the mint charges do not vary whether it is made finer or not.

Simeon Berghelm, iron merchant of London, has failed. His liabilities are stated at £40,000. Thomas Driver, cotton spinner, of Blackburn, has failed, with liabilities of £39,000.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, August 21, 1879.

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One of the most noteworthy facts in connection with the demand for railway supplies of all kinds, is that the purchases are for cash or very short time. It is said that the exceptions to this rule do not exceed 5 per cent. Of course the large demand, and the difficulty of getting orders promptly filled, enables the mills and shops to pick their customers and to demand cash, but the fact that the roads can pay cash is a most satisfactory evidence of their improved condition. Another feature in the improvement in railroad building is that nearly all the capital now being invested in this way is American, coming chiefly from Boston, New York and Philadelphia.

The agitation in the trades associations of England in favor of emigration as a means of relieving the industries of that country of their surplus labor, is at last taking form. A conference of delegates representing some 200,000 miners has just been held in Manchester, and the cable informs us that a resolution was unanimously passed favoring emigration to the United States. Mr. Alexander Macdonald, who represents the miners in Parliament, presided. This gentle-

man has for years been advocating restriction of output and emigration as a cure for low wages. He claimed that there was some opening at the present time for miners in this country, as during the recent depression in the coal regions of Pennsylvania and elsewhere a number of men sought other employment. The miners will find their mistake when they get here, if they intend to follow mining as a business. It is reported that some miners have recently arrived in Pittsburgh, believing that there was a scarcity of men. They have learned their mistake; but there is work in other lines. Agriculture is open, and land is cheap and on long credit.

The Present and Future of the Iron Trades.

Elsewhere we print a synopsis of the views expressed by a number of gentlemen prominently connected with the iron and steel trades East, West and South, with regard to the nature of the present activity in the market for these metals, and the prospects for the future as regards demand, the course of prices, &c. The epitomized reports of the interviews held with our representatives at different points will be read with interest, and require no commentary in our editorial columns. It will not be out of place, however, to venture some general remarks of our own on matters of timely trade interests.

We think it cannot be doubted that the increased consumption of iron is due to the establishment of confidence in the stability of values, in the integrity of the national government as regards the honoring of its obligations, and in the prospect of a continuance of the favoring conditions which have given us a credit balance in our international trade relations. But confidence is not so firmly established that it cannot be shaken. Capital is still timid, and it will be many years before prudent men forget the disasters of 1873 and the years immediately following. With a stable currency based on gold, and a stable tariff, it will seek investment in all kinds of legitimate enterprises, developing the country and setting in motion the wheels of industry. But let any kind of financial foolishness be seriously menaced, or a disposition be manifested by Congress to tamper with the tariff in any essential particular, and a tremor of doubt will spread through all departments of productive and distributive industry. It is the duty of every citizen who wishes to see the country prosper to discourage any unwise agitation of financial experiments or free-trade absurdities. We are not in need of anything which "reformers" in these lines can promise us. For the present we can best afford to let well enough alone. It is in the power of Congress to do infinite mischief, but no experiments in financial or tariff legislation, involving a change of policy, can possibly result in benefit.

It would be idle to warn iron manufacturers of the danger of attempting to take undue advantage of the opportunity for profit now almost suddenly opened to them. Every man will be influenced in these matters by his own ideas of good business management; but it is desirable that each should be governed, in shaping his policy, by enlightened self-interest, and not by short-sighted desire to exhaust the possibilities of a present advantage. From all indications, it seems to be safe to conclude that during the next two years the demand for iron will absorb the product of such of our mills and furnaces as are in a position to produce under conditions favorable to an average economy of cost. How long this demand will continue no one can say. Unforeseen causes may stimulate or check it, but none which can now be safely considered as probable factors in the problem of the future, are likely to so increase the demand as to justify much, if any, immediate increase of furnace or mill capacity. Capitalists who may contemplate investments in new furnaces or mills would do well to consider the matter very carefully. The experiences of the past few years have shown that it is very easy to make mistakes in the iron business, and thousands who have seen their capital swept away in the failure of companies which had built costly plants, can testify how delusive are paper estimates of cost, demand and profit. The requirements of consumption will unquestionably call for a gradual increase in the number of furnaces and mills, but those who build any but the best which can be erected, or locate them anywhere but in the most favorable positions, in relation to materials, market and transportation, will find they have made costly mistakes, and during the next ten years may see their undertakings abandoned as disastrous failures. There are furnaces and mills, built within the past few years, which can never hope to compete for trade on terms of equality with others costing no more, but built more wisely. There need be no haphazard experiments nowadays in the building of iron works. Experience has solved most of the problems which present themselves to the capitalist about to engage in this business. Another fact worth remembering is that there is no longer room in the business for ignorant or incompetent men as managers of works. They had their day when it was profitable to make iron by rule of thumb. Now they must give place to other and more competent managers. Experience counts for little as compared with technical knowledge and trained

powers of scientific observation and inquiry. The business of managing iron works now devolves upon the engineer and the chemist. The practical man will do very well at the taphole, but the manager's place is at the tunnel head or in the laboratory.

Prudent men have learned from experience that it is well for a corporation or an individual whose capital is represented in mines, furnaces and mills, to keep well in hand the resources which in case of emergency are needed. Too much expansion is always dangerous. A reserve of available capital is an element of strength even in times of abounding prosperity—in times of depression and disaster it is indispensable. This is a truism, but too many overlooked or forgot it prior to 1873.

With regard to prices, they may be left to regulate themselves. Men who have anything to sell will get for it all they can; buyers will pay no more than they must, and the results of the competition between them determines the value of all commodities, iron included. If makers, taking advantage of the present large demand, push the prices of iron to a point at which consumption is checked, there will be an accumulation of iron on the market and prices will decline. Such fluctuations are subject only to the natural laws of trade, and counsel to the iron makers not to advance prices too rapidly, seems to us profitless. So long as the wants of consumers are unsatisfied, the make of furnaces and mills engaged ahead and orders placed with difficulty, prices will continue to advance. When there is a surplus stock and makers have to compete for orders, prices will decline. We do not look for any sudden or extreme fluctuations from any cause during the next two years. They will be held in check by evident limitations. Meanwhile we may look for a substantial material progress. The needs of the country demand enormous quantities of iron in all forms, and in the absence of disturbing causes not now discernible in the outlook, iron making will yield fair returns to those who conduct its manufacture on sound business principles.

Taxing Commercial Travelers in Texas.

Imitating the illiberal, mistaken, and probably unconstitutional action of a few other States, the Legislature of Texas, at its recent session, passed a law for the taxation of commercial travelers, which, as a stride toward barbarism, is a little ahead of anything of the kind on record. It provides that "all solicitors of trade, commercial agents, drummers," &c., "shall pay annually into the State Treasury \$200." To make sure of collecting this tax, the law provides that it shall be paid in advance, and for an entire year, by any one who shall undertake business in the State. Severe penalties are provided for evasions or violations of the statute. The following sections will be found of interest to Northern houses having business relations with Texas:

Any manufacturer desiring to engage drummers in this State must send an affidavit to this (the Controller's) office, signed by the president or proprietor—said affidavit must state that said company or proprietor is an original actual manufacturer, and that the same is represented by the parties named in said affidavit, who are the authorized agents, and that all the goods or articles so represented are manufactured by said company or proprietor, and are not bought from any other person. Said affidavit shall give the names of the drummers, agents, &c., and permits will be issued at this office for each of said drummers.

Merchants in or out of this State, on payment of the annual tax of \$200 as merchants, said payment to be made in advance in this office, will be authorized to have as many drummers in this State as they desire, without said drummers being required to pay occupation tax.

Drummers holding permits under this last instruction will not be authorized to act for any other merchants, and any drummers holding permits for merchants and engaging for other merchants will be held to payment of the personal annual tax of \$200.

This affords as good a chance as has yet been offered for testing the right of a State to impose taxes calculated and designed to obstruct inter-State commerce, and especially to demand payments from merchants and manufacturers in other States as a condition precedent to the enjoyment of the right to solicit orders or sell merchandise within the limits of the State. We believe such a law to be at variance with the specific provisions of the Constitution and contrary to public policy. In its enactment the Legislature of Texas has usurped the power which belongs exclusively to Congress, and we imagine that any attempt to enforce it could be successfully resisted by appeals to the United States courts, by or on behalf of citizens of other States against whom proceedings were taken by the local authorities. It is scarcely probable that its provisions will be observed by the business community without resistance, and we hope that if a defense of the travelers is undertaken it will be pushed to a point beyond the jurisdiction of the State courts.

As a business venture the new Constitution of California promises to be a bad investment. After making all due allowances for the misrepresentations of this document for political reasons, and their effect, both present and prospective, there seems to be no doubt that the instrument is hostile to the business and industrial interests of the State. Those who have at heart the prosperity of the State are already casting about for means of arresting and changing the present condition of affairs. Under the pressure of the heavy discriminations against capital, many capitalists anticipate that they will be forced to close out their interests in California and seek investments elsewhere. This instrument, which has been aptly termed "Politics run mad," will seriously affect the de-

velopment of the Pacific coast, and postpone the coming of that day so graphically described by Richardson, when New York and San Francisco will contend for the commercial empire of the world.

Canadian Gossip.

Canada is as ambitious a country in proportion to her population and importance as any on the globe. She has her own little court, with a real live princess and a "marquis" to follow her in the dual capacity of husband and Governor-General; her own Pacific Railroad scheme; her own tariff; and now she is about to have her own industrial exposition. This will be held this fall at Toronto, and entries of machinery can be made as late as August 30. As an exhibition of the agricultural and industrial resources of the country, the first ever attempted, it will no doubt prove a success, and will unquestionably be interesting. The managers are somewhat too discreet to attempt to give it an international character. Toronto would not be a good place for a world's fair, even if organized under the patronage of Mrs. and Mr. Lorne.

Concerning the Canada Pacific Railroad, we learn that the Cabinet have found it necessary to announce that nothing can be done in the matter this year. As a revenue measure, the new tariff has not realized the hopes and expectations of its sponsors, and the promise of Sir John A. Macdonald and his party to further this undertaking, though probably made in good faith, is one they will have great difficulty in keeping. The road will cost at least \$150,000,000 to build, and it would be many years before it could meet interest and operating expenses. There is no present necessity to justify its construction, and little prospect that the imperial guarantee will again be extended to a Canadian loan for this purpose. The fact that British Columbia wants it, and will not be satisfied with anything until she gets it, may be a good political reason for making promises in connection with the undertaking; but in the absence of a business reason for making such promises good, they are not likely to be worth much. The route selected is so far north that it is uncertain if it could be kept open in winter, and its terminal facilities at Bute Inlet and Halifax are not good enough to justify the belief that any considerable part of the trade of the East could be diverted from San Francisco and New York. But it is a good thing to talk about, and the talk has already had an important influence upon the drift of Canadian affairs.

The Latest Move of the Comstock Magnates.

People on the Pacific coast interested in mining in general, and those who have money at stake in the Comstock mines in particular, are much excited over the attempt made within the last few weeks by those controlling the bonanza and other mineral properties at Virginia City, Nevada, to reduce to a dead letter certain laws on the statute books of California and Nevada. We need hardly refer to the pernicious system of stock gambling, for which the mines of the Comstock lode have served as a pretext, nor will it be necessary to outline the *modus operandi* by which a small ring of capitalists alternately depress and bolster up the market, in order to fleece a host of foolish investors, who have been worn out enough by the press throughout the country. It will be sufficient to point out that one thing is absolutely necessary for the success of the manipulations of the "ring"—to keep the large body of "outsiders" in ignorance of what is really going on in the mine, unless a great strike has been actually made and everything is prepared to realize on the "booming" market by unloading stock. Recognizing that better means for publicity of the actual state of affairs in the mine would serve as a protection, at least, to that portion of the minority of the shareholders who are *bona fide* investors, the Legislature of California, and one year later that of Nevada, passed a law which gave the holders of a specified amount of stock—one-tenth of the whole—the right to enter and explore the mine. Naturally, the "insiders" grumbled, but they submitted to the law and appointed the first Monday in the month as "visiting day," and it became the custom of small shareholders to unite in appointing a trustworthy expert to examine and report on their property. It is this system against which the "bonanza firm," Mackey, Fair & Flood, have taken a decided stand, by refusing properly qualified persons admission to the mines under their control. Two cases are now prominently before the public—the refusal of Mr. Mackey to allow Miles Finlen to examine the Sierra Nevada, and that of Philip Diederichsen, superintendent of the Hale & Norcross, to admit Mr. A. Thompson. In the former case the affair culminated in an edifying rough-and-tumble fight between the king and his inquisitive visitor, and in the latter resulted in the arrest of the superintendent at San Francisco. The courts, it is believed, will impose a fine, which the "insiders" will pay, probably with the mental reservation that they will squeeze their victims all the harder for the trouble to which they have been put. They will henceforth close their mines whenever they see a profit in doing so, and continue to invite the public to gamble with the same odds against them. We have little sympathy for those who, knowing the actual state of affairs, lose their money by hoping for a lucky turn in Comstock stocks. We would, however, take this occasion, which again amply proves that those at present controlling the mines are determined to continue their shameful system, again to warn investors not to place their funds in Comstock stocks until a complete change of régime has taken place.

The Situation and Outlook in the Iron Trade.

Views of Prominent Manufacturers and Dealers.

With a desire to learn the views of representative men in the iron and steel trades as to the condition and prospects of these industries, we have caused inquiries to be made at different points by representatives of *The Iron Age*, and give below, in condensed form, the views expressed by gentlemen well known in, and prominently connected with, the trade, using the names of our informants where permission to do so has been given:

PHILADELPHIA AND VICINITY.

In Philadelphia the general impression among iron men is that the advance is the result of a general revival of business, and is likely to be permanent. So far the profit has been small, as labor and the other factors have shared in the advance. As regards further advance in prices, the dread lest such a proceeding would also advance labor leads manufacturers to prefer the existing quotations. It is the prevalent belief that production in pig, muck bars and nails can be largely increased, but that in finished brands the limit would soon be reached. Inquiries among some of the prominent producers have elicited the following opinions:

One gentleman said that the reports that mills were declining orders had a tendency to unsettle labor. The men kept themselves posted in iron news, detailing one of their number to examine the newspaper files. An article lately published to the effect that 40 per cent. instead of 40 cents per ton had been granted to the hands in a certain mill, had created a general feeling of dissatisfaction, both among the men and the manufacturers. He could not tell to what figure iron might rise, or even if the limit was reached. He was under the impression that the production of bar iron and rails could be considerably increased.

Messrs. Jas. Rowland & Co. seemed inclined to deprecate any undue haste, either on the part of producers in forcing the market or believing in the exaggerated reports relative to a prospective iron famine, industriously circulated by some of the daily papers. In reference to the question as to whether the late advance in iron might be considered permanent, Mr. Rowland said that he could not foretell what would happen. He did not want to express any opinion whatever on the subject, as he thought the press did wrong in trying to "bull" the market. For his part, he was not refusing any orders, and believed it was a good time to sell out business.

The opinion expressed by Mr. Robbins, of S. Robbins' Son, was that the advance would maintain its present ground for several reasons. In the first place, there was a *bona fide* increasing demand for iron, which was being largely used for many new purposes and enterprises (involving a large consumption of that material) now under way, or on the point of being undertaken. Then people were recovering from the panic, and all branches of industry had received fresh impetus. There was not so much profit as yet to sellers, as all hands engaged in the production claimed a share in the advance. He could not say how far the price would go. It would not do to go too high, on account of the danger of foreign competition. He believed that there would be room in the market for all the furnaces built before the war, and also that production could be largely increased.

Messrs. J. Wood Bro. thought the advance a sound one, and that it would continue. Believed that iron would advance another cent per pound and stay there. The production of sheet iron could be considerably increased. They had been very busy, and expected to sell out all stock on hand during the week.

Hon. J. P. Verree, President of the Philadelphia Iron and Steel Company, on being interviewed in regard to the advance in iron and its probable results, said: "I believe that the advance is likely to be permanent. The whole secret of the rise is that Pittsburgh has been 'bearing' the market for the last four years, and most mills have been obliged to sell at whatever price she wished; but now, on account of her largely increasing Western market, together with the rise in prices, and for all practical purposes is at present entirely shut out of Eastern markets. For these reasons, I feel assured that the advance is grounded on a firm basis. The prices will very likely advance to 2½¢. I think production in most all branches of iron can be increased. There is no immediate danger of foreign competition, as iron cannot be brought into the country under 2.4¢."

Mr. Patterson, of Messrs. Hughes & Patterson, recommended extreme caution, and charged the furnacemen with a desire to push the price to the extreme margin. He did not know but that they were rather overdoing it; if so, things would be worse than before when the reaction came. The advance, he said, originated with the furnacemen, and they are not satisfied yet, but talk of putting the price up to \$25. He was of the opinion that it was quite high enough already. The firm, he continued, were better off with iron at 1.9¢ than at 2.1¢, owing to the increase in wages. If we did not take care we would have foreign iron in the market.

At the McCullough Iron Company's Works the impression was that the advance in the price of iron was justifiable, and likely to be permanent. They did not think, however, that prices would rise much higher. Referring to the possibility of a further extensive production, the opinion given was that galvanized sheet iron, particularly, could be increased to a considerable extent.

Mr. W. E. S. Baker, of the Duncannon Iron Company, was disposed to take a hopeful view of the business prospect. He asserted emphatically that the advance must be permanent, as he did not see how it could be otherwise when the demand exceeded the supply. In all quarters the outlook was

encouraging. The general prosperity of business had excited a demand for iron. Railroad companies who have not done any repairs for years are now doing so to a large extent. These companies and private parties are using iron for many new purposes; the incoming crops are heavier than ever known before, and everything indicated that trade was at last moving in the right direction. Bar iron, rolled iron and steel will also exceed in production any previous year, and is being absorbed as fast as made. Every shop is busy. The production of bar iron cannot be greatly increased. Pig iron can to a considerable extent, but rails cannot. Rails are capable of being extensively increased, though they are below cost at present.

Mr. Percival Roberts, of the Pencesoyd Iron Works, expressed the opinion that the improvement in the iron trade was genuine and would probably be permanent. At the same time there has been a great deal of misconception in regard to business, largely due to the exaggerated reports given in the daily papers from time to time. The most important fact is in the complete restoration of confidence in values, and vastly increased consumption of material. The advance in prices is too rapid, however, and instead of being a source of profit, is in many cases rather the reverse. By way of illustration Mr. Roberts stated that nearly all the large mills manufacturing shaped iron, were compelled to bid for work from three to six months and upward before they could possibly finish the contract. An order bid for to-day may not be given out for some weeks, and the contract not completed probably for months afterward. As a matter of fact, Mr. Roberts stated that his firm have orders on their books taken early last spring, and which may not be finished until late in the fall. They fixed their prices based on the current rates for labor and material at the time the orders were taken, and any advance on these is just so much out of pocket. Mr. Roberts believes that labor ought to be advanced gradually; the men have had from 5 to 10 per cent. this year already, while material has advanced still more, but the amount of iron delivered by his firm at advanced prices is quite insignificant. Orders now being entered are at higher prices, but will not more than cover the advance in wages plus the cost of material.

Mr. Andrew Wheeler, of Messrs. Morris, Wheeler & Co., when interviewed on the subject, said that he considered the advance in iron to be a genuine one so far. It arose out of a growing demand from all quarters, as shown by the fact of the production being immediately absorbed as soon as placed in the market. So far the profits have been pretty equally distributed between production and labor. The prices are gradually stiffening, and further advances will probably take place, though to what extent it is difficult to predict at present. There is still a large margin between the price at this date and foreign iron. The latter cannot be imported under 2.6¢. One large firm have advanced their prices in all brands of sheet iron, and sales of 100, 200 and 300 tons have been reported. Production in plates cannot be increased except to a moderate degree, nor can bars be produced to any great extent. Mr. Wheeler concluded by remarking that the firm had been very busy of late, being forced on several occasions to refuse orders.

Mr. David Reeves, president of the Phoenix Iron Company, expressed himself to the effect that the advance in the price of iron was founded on a substantial basis and genuine so far. It was the result of a general demand for iron, and most probably the advance would be maintained. He would not like, however, to see prices go any higher than present quotations, as labor would advance in proportion, and should a reaction ensue prices could not readily be brought back to present rates. It was impossible to say, with any degree of certainty, how high prices might go. There are some parties extremely desirous of pushing the figures. He believed that the production of pig iron and muck bars could be increased largely, as there were a number of furnaces preparing to start into existence. In regard to finished iron, the production must necessarily be limited.

Other Philadelphia manufacturers were called upon, and, although quite willing to give their views to *The Iron Age* informally, they declined anything involving the use of their names in print.

Mr. Brock, president of the Reading Iron Works, expressed the opinion that the improvement in the iron trade was legitimate, and would be permanent if prices were not run too high. The signs of improvement in the English market he regarded as being very important, as it would be difficult to maintain remunerative prices here unless there was some corresponding movement abroad. The demand for iron is likely to be almost beyond precedent, and there is no apparent reason why there should be a reaction.

Mr. Brock does not think much higher prices will be maintained than are now current, and in any case a rapid advance would be almost sure to bring a reaction. There is a small margin of profit at present prices, and with increasing production there is no reason to apprehend scarcity or a very high range of prices. Consumers would not object to pay a little more for iron if circumstances seemed to warrant it, but a very slight advance would open the way for several descriptions of foreign material, and for that reason it will probably be better for the trade that prices, for the present, should not be advanced further, except in sympathy with foreign markets.

Mr. J. H. Sternbergh, of the Reading Bolt and Nut Works, says: "December 24th last I wrote you that, 'before midsummer of 1879 is upon us, we shall all be surprised at the increasing demand for goods of reliable manufacture,' and our experience in the iron business during the past three or four months fully realizes the anticipation then expressed. The period of greatest depression has been reached and passed, and the iron trade for the next few years promises to be not only very large, but fairly remunerative; and what is more encouraging still is that the present greatly increased demand is entirely healthful and legitimate. I do not apprehend that it is a 'spurt' that will subside in

a month or two, but I believe that the business has come to stay. The demand of the country for iron may be compared to the returning appetite of an overgrown youth who has passed safely through a high fever and become convalescent. The wants of the railroads alone for several years to come will be enormous, while the demand in other branches of business, though less conspicuous, will, I apprehend, be none the less general. I do not anticipate high prices for iron, for the reason that our capacity for production will, for a long time, stand as a menace to any very rapid advance—not to speak of English competition and tariff agitation. But buyers of iron are not unreasonable, and I believe are willing to pay producers a price commensurate with the capital, labor and risks of the business. The increasing demand for iron will naturally tempt manufacturers to add to their facilities for production. If they yield to this temptation, it may result in injury to the iron trade as a whole, if not embarrassment to themselves. This will be one of the dangers of the coming situation; but if manufacturers are conservative, and content to employ their present facilities for a few years, and meantime turn their attention to improved methods and the production of finer grades, I believe the effect would be highly beneficial and more permanent. These are merely anticipations of the future of the iron trade in this country, which I will not attempt to justify with reasons further than to refer to our growing population, magnificent harvests, rich mines, and the resumption of specie payments and general restoration of confidence. 'We will lift up our eyes to the hills and rejoice in our heritage!'

In conversation with Messrs. R. C. Hoffman & Co., of Baltimore, as to their views in reference to the present condition of the iron trade, also the prospect for a continuance of the marked activity now prevailing. Mr. Hoffman expressed some doubt as to the future. While the mills are running to their full capacity, with orders enough on hand to last for some time to come, it is a question if after these orders are filled others will be found to take the place at prices now current. It is well understood that since iron has taken such a shoot upward, contracts have been given in advance of present actual requirements, and with the expectation of still further advances. As a consequence orders have been larger than they would have been. It cannot be denied, however, that business is active at present prices.

PITTSBURGH AND VICINITY.

A careful inquiry among the mills at this point reveals the fact that never before in its history were the mills so busy as just at this time. They are making more iron of all kinds than ever before, with the single exception of nails. Their books are crowded with orders, and new ones are being refused almost daily. Some of the mills are buying muck bar in large quantities, a most significant feature, indicating that the rolling capacity of the mills is in excess of the puddling capacity. We give below the views of some of the most prominent men in the trade at this point. Objection was made to the use of names, but we can assure our readers that they are the views of men who are well known all over the country, and who would be accepted as representative men.

A leading pig-iron broker states that they have more orders than they can fill. The furnaces that they represent are sold out, and most of them are sold ahead; orders that they take are for future delivery, and almost every new order is at an advance. The causes of this advance are those that have been stated in *The Iron Age*—the great increase in railroad construction and the increase in the cost of materials. The consumption has increased largely, while the supply has been reduced. The furnaces have not made an amount equal to the demand, and stocks have been drawn upon until there is not a pig at the furnaces, and all that is made is shipped hot. The demand for Bessemer pig has absorbed all the best ore, and ore lower in metallic iron, the freight upon which is as high as that with a much larger percentage, has to be used. The only weak point in the situation seems to be that furnaces can be blown in and the market overstocked. But this will take time. The Lake ore is all sold, and furnaces cannot start West until next year, and at the East ore must be dug and preparations made to blow in. On the whole, it seems as though the increase will be maintained and there will be higher prices realized. Whether the highest price will be sustained may be a doubtful question.

Another extensive pig-iron broker said that they were just floating with the tide and added: "It looks as though the present or some approximate condition had come to stay, but the American people are so given to overdoing things that it looks as if they would rush prices up abnormally. But no one knows."

One of the most extensive manufacturers of iron in the United States, whose name would be regarded as an authority, stated that he considered the advance a perfectly legitimate one. There had been for months a small stock of iron in the country, but the buyers had found that they could get all the iron they wanted and when they wanted it, and as a result only bought as they needed, and allowed the mills to carry the stock for them. As soon, however, as they found a little difficulty in getting orders filled promptly they began buying for something more than their immediate wants, fearing that their works might stop for want of material. The difference between a low stock and a full stock is 90 days' work of all the mills running. Consumers also believe that iron must advance even more than it has. They have wondered at the low prices at which it has been sold, and have been expecting higher prices for a long time. Those that believe in the advance have been placing orders to get the benefit of the still further advance in prices. "Do you think the advance will be maintained?" "I think that we will maintain iron at the price we have reached now, and perhaps at a higher figure, to which it seems destined to go. It may even go to 2.25¢ and stay there. I think, however, that under the excitement iron will, in some cases, be advanced to a

price that it cannot be held at, and there will be a reaction from these extreme prices, but it will not fall below 2 cents." "Does the cost of making iron justify this advance?" "Yes, sir; you must remember that bar iron has been selling at a loss; it has fallen to a lower point than was ever before known in the history of the iron trade of this country, and when the advance came it was sure to advance more than the increased cost of material itself would justify—that is, we must cover this increased cost, the loss and something for profit. Even at 2 cents there is scarcely any margin for profit at present cost of materials and expense of manufacturing and distributing."

A gentleman connected with one of the largest rolling mills in the city stated that he regarded the outlook as very favorable, both for a continuance of the demand and for the maintenance of the present advance, and a still further appreciation in price. "There is, so far as we can discover, no cessation in the demand. We could have sold last month as much iron as we could have made in six months, and the best feature of the demand is that it does not seem to be speculative—the iron is bought for consumers. Some of these consumers are trying to buy for stock, or in excess of their immediate wants. This, however, is a good indication, as it shows that they believe iron is going to be scarce and that prices are going up. I do not think there is any danger of manufacturers overdoing in the matter of prices. They do not seem inclined to put prices to an exorbitant figure. They want a fair margin of profit, and this they have not had for five years. Prices are beyond the control of any one. The advance shows this. There was no concert of action on the part of the manufacturers, nor was there any determination on their part to ask an advance. The opportunity came, and they have taken advantage of it."

A gentleman well known to the entire trade of the country stated that he had no doubt but the advance was legitimate, that it would be maintained and that there would be no falling off in the demand until the first of the year, when the usual slackness of the season would be manifest, but not so great as it has been for some years. The trouble, he found, was not to get his price, but to supply iron as fast as was wanted. He was buying muck bar now and running all his furnaces, and yet his orders were pressing him. He had been offered 2.20¢ for a few cars of bar iron that were needed in a hurry, and that a few weeks since he would have taken at 1.75¢ gladly, but his orders were such that he could not take it. An attempt to divide it up among several mills was a failure, and the party could not get the iron in Pittsburgh though he offered 2.25¢. "Of course this price was one forced by the circumstances, and ought not to be quoted only to show how difficult it is to get iron for immediate delivery, nor is this difficulty the result of the mills being loaded with orders at the old very low rates. We have but one order on our books at less than 1.85¢, and that will be filled before you get these words in *The Iron Age*. This advance has been a surprise to me. I believed that we would have somewhat of an advance this fall, but I did not think it would be so great. As to its causes, I think *The Iron Age* has explained them in its editorials. Your report of prices and the advances have been very correct."

A large manufacturer of bar iron who is also a blast furnace proprietor, said that he thought the market justified not only the advance that had been reached, but a still further one. "The advance in ore and coke made one in pig iron necessary. The increased demand for iron rails took the old rails out of the market and enabled us to clear off the old hard stocks of pig that have been a burden to the pig-iron market. The demand for the high grade ores for Bessemer have made these scarce for furnaces running on mill iron and forces us to use hematites, and this has added to the cost of manufacturing pig. This advance in pig iron and the scarcity of old rails, have forced an advance in bar iron, and on that I think it will be maintained. But a few months ago old rails could be bought at \$18 to \$19. I know of a refusal of \$27 for a lot last week. Nor do I think that manufacturing is going to be overdone. The scarcity of old rails alone will largely reduce the output. I know of a mill that has been using old rails that turned out 125 tons of finished iron a day. Their puddling capacity is not over 75 tons. I do not think the advance is more than justified, 2¢ is no more than a fair price for iron, and we are getting that price for all we sell now. Sometimes we quote 2.10¢ or 2.15¢, but this is more to quote some price rather than with any expectation of getting it, though we have been offered the highest figure for immediate delivery. You must remember that we started with iron lower than it should be. The first advances only brought it up to a fair price, and since then the advance in bar iron has no more than kept pace with the advance in pig and in cost of manufacture. The excitement may force iron beyond a price at which it can be maintained. This is a natural consequence, but it will be maintained at its present price. As to the future, I believe we have entered upon an era of prosperity that will continue for some years, and that from now for some time to come the course of the market will be upward. There will be temporary reverses, but the tendency will be advancing."

Mr. R. F. Smythe, of Chess, Smythe & Co., nail and tack manufacturers, stated that their mill was running double turn. They are asking \$2.35 card for their nails, and are receiving orders for them at that price, though they are not getting so many as they would have were other localities asking the same price. They have no traveling men out, but orders come in. With bar iron selling at 2¢, nails certainly ought to command \$2.35, and how mills can sell at \$2.15 he cannot understand.

A Wheeling nail manufacturer who runs over 100 machines, was present during the conversation. He expressed the fear that a general increase in the price of nails to \$2.35 even, would lead to the starting up of mills that were idle. He acknowledged that at \$2.15 manufacturers could scarcely clear themselves, and that there was more money in making muck bar for the Pittsburgh iron mills, as some of the Wheeling mills were

doing, than to make nails at this price; but for the present, at least, they did not propose to advance.

Among manufacturers of steel the general feeling is that the outlook is very favorable, unless the business is overdone. There has not been much of an increase in prices, nor is there likely to be, as any considerable increase would certainly lead to large importations of English steel. Even at the present rates there is some danger of such importations. Of course, if steel iron goes up, steel must advance, but it is probable that any advance in this country will be the occasion for an advance abroad. There has not been much of an increase in orders. Of course, if consumers anticipate a rise they will send in orders, but there has been but little increase from them.

One of the officers of the Edgar Thomson Steel Co. expresses the following views: "Steel rails will be advanced as Bessemer pig advances, and this is already \$3.00 higher than some months ago. It is not wise to advance rails to too high a figure, though I believe that the advance that has taken place will be maintained. We will not be troubled with importations of English rails if no further advance takes place." "Will the starting up of so many iron rail mills and the increased production of iron rails tend to reduce the output and price of steel rails?" "No, it will not. The price of new or rerolled iron rails has been based on the price of old rails, and this has been for some years until lately two or three dollars above mill pig iron. Now old rails cannot be had, certainly not at any such price relative to forge pig iron. They have been used so largely in the manufacture of merchant iron that they will not be so low hereafter, and if iron rails are made out of pig iron they cannot be made much less than Bessemer rails. Our mill is full of orders for this year, and we are not yet quoting for next, as we do not know what the prices for raw material will be."

CINCINNATI AND VICINITY.

Mr. M. Churchill, president of the Ohio Iron Company, Zanesville, Ohio, says: "During the past 60 days merchant iron has advanced in price from \$3 to \$4 per ton in this section; orders have been offered more freely than at any former period within six years, and prices are still hardening, in sympathy with the appreciation of raw stock of all kinds, and the revival of business generally all over the country. Prices are yet very low. But few persons not in the business are, perhaps, aware of the fact that for a year or more manufactured iron has sold in the West at from \$10 to \$15 per ton below anti-war prices, and that there is yet room for a considerable further advance before reaching the lowest prices ruling before the war."

"The outlook for the iron interest and for business generally appears more promising than at any time since the war. With our domestic obligations largely liquidated, the bulk of foreign indebtedness discharged, and exports exceeding the imports hundreds of millions of dollars yearly, gold coming to us from Europe, our unprecedented crops, a stable currency of unvarying value and with more of it to do business with than ever before, and with the economy and thrift of all classes of our people, enforced by the hard times, there is, in my judgment, open to this country an area of unprecedented prosperity of many years' duration."

"If our financial quacks and political demagogues can only be induced to subsidize and give us a rest, or if that cannot be, to migrate to Turkey or some country enjoying the benign blessings of an irredeemable currency, and if Congress should happen to have the sense to let the exciting finance and tariff laws severely alone—keeping hands off—the country cannot help being prosperous."

A gentleman well acquainted with the Cincinnati market, in reply to our inquiries says: "About the first of this month there began to be quite an excitement among Western manufacturers and dealers in iron, and speculators were on the alert. Prices in advance of quotations were offered for small lots, but in consideration of the scarcity, especially, of mill iron, there have been no large sales made since the 31st of July. Stocks recently reported on hand are rather doubtful, there being, with few exceptions, little or no stock in the hands of furnace owners. Hanging Rock charcoal is very scarce, and the furnaces of that region have orders which it will take several months to fill. Some of the larger consumers of this city have stocks of mill iron which, with a mixture of one-half to two-thirds scrap, will probably last from three to five months to come. Furnaces that have been out of blast for years are rapidly being prepared to go into blast as early as possible. Since the 1st of July there has been an increased production up to this writing of 125 to 150 tons per day, all grades, and it is thought by some of our most far-seeing dealers that the increase of production will, by the 1st of November, reach 250 to 300 tons per day. There has been little or no increase of demand for foundry consumption since the 1st of July, and none in prospect, the principal demand being confined to mill stock."

"It is generally conceded here that the demand for mill iron will increase for the next year to come, to the extent and capacity of the furnaces now in and to go in blast this year, and that when prices get settled (which may be about the 1st of November, at which time most consumers will have been supplied) the advance will reach an average of from \$1 to \$5 per ton in all grades. Recent sales at the advanced prices have principally been made to speculators. Some small lots of stonecoal and coke have changed hands at an advance of \$2, per ton, and charcoal at from \$1.50 to \$2 per ton. There have also been some isolated cases of sales of stonecoal of iron of low grades at an advance of \$3.50. This is a grade that has heretofore been rejected and sold below any other iron, but is now being brought into use as softeners. There have been some small sales of high grades sold at an advance of \$4 per ton. It is the opinion of one of the leading iron merchants of this city that it will be some time before strictly No. 1 charcoal iron can be bought for less than \$25, per ton, in any quantity, in this market, and he does not know where 100 tons can at this time be

bought for less. There are some lower grades on the market in small quantities for less, but even that is scarce. The disposition of owners is to hold out of the market in view of the prospective greater advance. Pig iron having been so low, intelligent dealers watching the steady demand during the past two months feel that the rise is legitimate, that the demand for some time to come will steadily stimulate increased production, and that the present and probably higher prices will continue to rule."

The following is a full and carefully written report, prepared by Mr. Matthew Addy, of Cincinnati, which is a fair exposition of the condition of that market and the 80 furnaces represented there.

"In response to your request for some information pertaining to the present condition of our iron market, we submit the following:

"Prices to-day will average from \$4 to \$5 higher than they were on July 1. This large advance is applicable mainly to hot-blast irons, though warm and cold-blast have materially improved in values, and with a demand exceeding the supply, still higher figures are speedily anticipated."

"As early as last fall it was noted that the supply of old rails was being gradually reduced. This naturally led to an improvement in the demand for forge metals, and from that time until the present the consumption has been in excess of the production. This spring the trade for all descriptions, cold as well as hot-blast, was good, but not till the beginning of last month did we realize that actual consumption was sweeping away the stocks on hand."

"We think our market affords a fair index of the general condition of the country. Her supplies come from the States of Pennsylvania, Ohio, Indiana, Kentucky, Tennessee, Georgia, Alabama, Virginia and West Virginia, while the trade is found in a much larger area of territory. Throughout these sections the demand has been unusually large, and, as stated before, it is now in excess of supply."

"Referring to the stocks on hand in yards, and at the furnaces tributary, in whole or in part, to this market, we think the aggregate of all grades will not exceed 40,000 tons. Bearing in mind, also, that probably one-half of the furnaces are sold ahead to the extent of 50 per cent. of their capacity for the present year, we fail to see any near prospects of a retrograde movement, unless there is a very large increase in production, which is not now probable."

"In the hands of consumers we think there are no unusual stocks. A few of them have supplies sufficient for 4 to 6 months, and, in exceptional cases, for 12 months. The major portion, however, will be compelled to come into market during the next 30 to 60 days."

"Sharing in the general opinion that better times are before us, and that probably all branches of business are in the upward scale, we cannot but feel that the trade in iron will be good throughout the year. The increase in product during the next three months, arising from furnaces which have been idle for years, but which are now preparing to go into blast, will aggregate, say, 300 tons per day. In view of the fact, however, that our supply is smaller than it has been for many years, and wholly inadequate to the wants of the trade, we believe that the increase of production will command a market at full prices."

The following is a letter from Messrs. E. L. Harper & Co., which will be found to contain much valuable information pertaining to the condition of this market.

"The Hanging Rock charcoal furnaces with a few exceptions have no stocks on hand, and a number have contracts that will occupy 6 to 9 months. The stocks of this grade are in the hands of a few companies, who are perfectly able to hold firmly at full market rates. No. 1 Foundry is quotable at \$26.00 to \$27.00 here, 4 months. An offer made this week for 1000 tons at \$25.00 cash, was refused by sellers. In the south there are no stocks of hot-blast charcoal iron with one exception, this lot being off the market and in strong hands. The coke and stonecoal Hanging Rock furnaces have little iron on hand, and many of them have orders ahead. The Southern coke furnaces are bare of stocks, with contracts that will absorb all they can produce for periods ranging from 3 to 9 months. Forge irons are especially sought after, in consequence of a very active demand for mill products and the short supply of scrap. The offerings of old rails are very light. The demand for all grades of foundry and forge iron shows great activity, and prices are advancing rapidly. Actual sales show an improvement of \$2.00 to \$4.00 within the week past. The present conditions are more favorable than they have been since the panic."

All the rolling mills of Cincinnati are running to their utmost capacity, with large orders booked far ahead, many of which were received months ago. About the first of August mill owners advanced prices, and at a recent meeting another advance was made, as will be seen by the following card rates issued by Mitchell, Tranter & Co.: On account of the advance in raw material, we are obliged to advance the price of all our manufactures. Recalling all former quotations, we note below for present orders, which are subject to change without notice:

Bar Iron.....	Card Rate.	2 1/2¢
Tank, Jail and Safe Plate.....	Ordinary size.	2 1/2¢
No. 10 to 14 Bolted Sheet.....		2 1/2¢
No. 15 and 16 " " " " " "		2 1/2¢
No. 17 and 18 " " " " " "		3¢
No. 20 and 24 " " " " " "		3 1/2¢
No. 25 and 26 " " " " " "		3 1/2¢
No. 27 " " " " " "		3 1/2¢
C. No. 1 " " " " " "		3 1/2¢
C. H. No. 1 Ex. or Stam'd, 50,000 T. S.		3 1/2¢
C. H. No. 1 " " " " " "		3 1/2¢
C. H. No. 1 " " " " " "		3 1/2¢
Flange Sheets.....		4 1/2¢
Flange Heads, Half Heads and Port-		
able Heads.....		4 1/2¢
Extra Locomotive Fire Box.....		2 1/2¢
Angles.....		2 1/2¢
Extra for Cutting Bars to lengths.....		1 1/2¢

Mill owners here are holding inflexibly to the recently advanced rates, and contemplate a still greater advance at no far distant period; and even at the above rates they are compelled to refuse many orders. Mitchell, Tranter & Co.'s mills are running to their fullest capacity, producing from 350 to 400 tons merchant iron per week, and for the past ten days they have been compelled to refuse many orders. They have

On the Action of Fatty Matter in Boilers.—M. G. Peryea gives, in the *Annales des Mines*, the results of researches made to ascertain the origin and action of fatty lime deposits in boilers fed with the condensation water of surface condensers. A deposit collected in such a boiler yielded the following results by analysis :

Carbonate of lime	83.75
magnesia	2.71
Sulphate of lime	2.24
Lime in excess	3.14
Organic matter	2.24
Fatty matter	1.61
Oxide of iron	2.62
Water	1.92
Not ascertained and loss	0.10
Total	100.00

This deposit was pulverulent and of a grayish color, adhering but slightly to the heating surface of the boiler. It was not wetted by cold water, but during ebullition was promptly wetted and mixed with the liquid. When boiled with water, in which it was mixed in the proportion of at least one-half per cent., the liquid, increased in volume, became an emulsion, like boiling milk. The emulsion was increased with the proportion of the deposit ; but when the same substance was calcined, it could be wetted with cold water, and it ceased to cause emulsion when boiled. Fatty deposits generated without pressure, as in the hot well of a condensing

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Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, August 20, 1879.

The past week has been very active in financial circles. The money market continues firm, call loans averaging 5 @ 6%, with 1-16th of 1% per day as the extreme rate. Time loans are 5 @ 7%. The rate of discount on mercantile paper is 5 @ 6%. The banks are sending considerable currency West.

In the stock market there has been an active speculation, culminating in a collapse of the bull movement. As we hinted last week, the buyers of Lake Shore who held in anticipation of a consummation of the rumored lease of that road to the New York Central on a 6% dividend guaranteed, discovered that no such lease was contemplated, and that the story was the invention of speculators. After Lake Shore, the principal dealings were in Northwest, St. Paul and the coal stocks. We give below the closing quotations of active shares.

Government bonds declined early in the week 1/4 to 1/2, but subsequently recovered. We give below the quotations at the close of business to-day.

The bank return shows a decrease of \$5,343,500 in surplus reserve, which now stands at \$1,408,550, against \$20,242,525 at this time last year, and \$12,792,050 at the corresponding period in 1877. The loans show an increase this week of \$1,375,000; the specie is down \$70,000; the legal tenders are decreased \$6,461,500; the deposits other than United States are decreased \$4,755,600, and the circulation is increased \$37,400.

The following is an analysis of the bank totals of this week compared with that of last week:

	August 9.	August 16.	Comparisons.
Loans.....	\$279,936,600	\$274,311,000	Inc. \$5,625,600
Specie.....	19,694,100	19,523,300	Dec. 170,800
Legal tenders.....	50,435,500	43,974,000	Dec. 6,461,500
Total reserve.....	79,066,200	63,018,300	Dec. 16,047,900
Deposits.....	253,330,200	248,474,600	Dec. 4,855,600
Reserve re-quired.....	63,307,500	62,118,600	Dec. 1,188,900
Surplus.....	16,758,700	14,900,700	Dec. 1,858,000
Circulation.....	20,682,100	20,719,500	Inc. 37,400

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

For the week ended August 16:

	1877.	1878.	1879.
Dry goods.....	\$2,203,425	\$2,085,637	\$2,592,823
General mde.....	5,071,892	4,212,450	4,834,065
Total for week.....	\$7,275,317	\$6,298,087	\$7,426,888
Prev. reported.....	308,525,048	308,525,048	308,525,048

Since Jan. 1.....\$215,800,359 \$181,864,648 \$196,694,766

Included in the imports were items of merchandise valued as follows:

	Quantity.	Value.
Brass goods.....	11	\$1,690
Bronzes.....	5	1,263
Chains and anchors.....	1	1,620
Copper.....	2,889	30,112
Cutlery.....	108	11,354
Guns.....	33	1,620
Hardware.....	53	6,750
Iron, pig, tons.....	600	9,118
Iron, sheet, tons.....	53	3,767
Iron ore, tons.....	5,999	17,370
Iron, other, tons.....	947	18,470
Lead, pigs.....	439	2,707
Lead goods.....	139	22,013
Nails.....	14	5,614
Needles.....	14	645
Old metal.....	7	1,488
Percussion caps.....	7	1,488
Saddlery.....	10	1,488
Steel.....	10	1,488
Silverware.....	3	687
Tin, boxes.....	3,351	114,743
Tin, 4,339 slabs.....	67,071	67,071
Wire.....	3	3,173

REPORTS, EXCLUSIVE OF SPECIE.

For the week ended August 19:

	1877.	1878.	1879.
For the week.....	\$5,781,979	\$6,378,179	\$7,082,348
Prev. reported.....	4,775,154	5,093,430	5,775,418

Since Jan. 1.....\$170,657,133 \$215,811,603 \$204,067,763

REPORTS OF SPECIE.

For the week ended August 16:

	1877.	1878.	1879.
Total for the week.....	\$108,903	\$108,903	\$108,903
Previously reported.....	117,370,978	117,370,978	117,370,978

Total since January 1, 1879.....\$1,846,001

Same time in 1878.....10,029,472

" 1877.....21,833,464

" 1876.....30,028,749

" 1875.....63,232,402

" 1874.....30,609,470

" 1873.....38,825,449

" 1872.....55,800,431

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6%.....	121	122
U. S. 6% 1880 registered.....	102 1/2	103 1/2
U. S. 6% 1880 coupon.....	102 1/2	103 1/2
U. S. 6% 1881 registered.....	104 1/2	105 1/2
U. S. 6% 1881 coupon.....	104 1/2	105 1/2
U. S. 5% 1881 registered.....	102 1/2	103 1/2
U. S. 5% 1881 coupon.....	102 1/2	103 1/2
U. S. 4% 1881 registered.....	104 1/2	105 1/2
U. S. 4% 1881 coupon.....	104 1/2	105 1/2
U. S. 4% 1892 registered.....	101 1/2	102 1/2
U. S. 4% 1892 coupon.....	101 1/2	102 1/2

The following were the closing quotations of active stocks:

	Bid.	Asked.
American District Telegraph.....	63	64
Atlantic and Pacific Telegraph.....	35 1/2	36
Bur. Cedar Rapids & North.....	50 1/2	51 1/2
Canadian Southern.....	58 1/2	59 1/2
Canton.....	43 1/2	44 1/2
Cleve, Col. Cin. and Ind.....	50	51
Cleveland and Pittsburgh.....	98 1/2	99 1/2
Chic. St. Paul and Minn.....	40 1/2	41 1/2
Chicago and Alton.....	91	92
" Pref.....	114	115
Delaware, Lack. and Western.....	57 1/2	58 1/2
Delaware and Hudson Canal.....	47 1/2	48 1/2
Express-Atlantic.....	40 1/2	41 1/2
" American.....	40 1/2	41 1/2
" United States.....	43	44
" Wells, Fargo & Co.....	98 1/2	99 1/2
Eric.....	40 1/2	41 1/2
" Pref.....	40 1/2	41 1/2
Fort Wayne.....	112 1/2	113 1/2
Hannibal and St. Joseph.....	19 1/2	20 1/2
" Pref.....	41 1/2	42 1/2
Homestead.....	86 1/2	87 1/2
Illinois Central.....	86 1/2	87 1/2
Ind., Cincinnati and Lafayette.....	3 1/2	4
Kansas Pacific.....	57	58
Kansas and Texas.....	26	27
Lake Shore.....	84 1/2	85 1/2
Louisville and Nashville.....	53 1/2	54 1/2
Michigan Central.....	82	83
Morris and Essex.....	45	46
Manhattan Railway.....	45	46
New Jersey Central.....	50 1/2	51 1/2

Northwest.....	73 1/2	74 1/2
" Pref.....	97 1/2	98 1/2
Northern Pacific.....	16 1/2	17 1/2
" Pref.....	45	46
Ohio and Mississippi.....	15 1/2	16 1/2
" Pref.....	46 1/2	47 1/2
Ontario Silver.....	41	42
Pacific Mail.....	16 1/2	17 1/2
Quicksilver.....	13	14
" Preferred.....	38 1/2	39 1/2
Rock Island and Pacific.....	138 1/2	139 1/2
St. Louis and Iron Mountain.....	27 1/2	28 1/2
St. Louis Kansas City Northern.....	20 1/2	21 1/2
" Pref.....	54 1/2	55 1/2
St. Louis and San Francisco.....	12	13
" Pref.....	17 1/2	18 1/2
St. Paul.....	1st pref. 38 1/2	39 1/2
" Pref.....	64 1/2	65 1/2
Sutro Tunnel.....	95	96 1/2
Union Pacific.....	4	5
Wabash.....	76 1/2	77 1/2
Western Union Telegraph.....	37	38 1/2

GENERAL HARDWARE.

In nearly every branch of the Hardware trade great activity prevails, and orders, both by mail and from travelers, are abundant. There are a good many buyers from the South and Southwest in the city.

In Foreign Hardware a good business is reported, but no changes in values have occurred since our last writing.

The Globe Nail Co. of Boston issued, under date of 1st inst., a circular in which they caution the trade against selling certain brands of Horse Nails, in the manufacture of which they claim that their patents have been infringed. The Ausable Horse Nail Co. being mentioned in the circular, have written the following reply:

Office of Ausable Horse Nail Co.,
ABRAHAM BUSHING, Sec'y, 34 Warren St.,
New York, Aug. 18, 1879.

To the Hardware Trade.—GENTLEMEN: In reply to the circular recently published by one of our competitors, we would say that our Nails are entirely different from theirs, and are not described in or covered by the patent against the infringement of which they especially caution sellers. The blank of their Nail is punched or cut from a plate, and the shank of which is produced by cold rolling the body of the blank. Our Nails are hot forged from the end of nail rods while the iron is at a welding heat.

Mr. George Gifford, our counsel, says that sellers and users of our Nails incur no liability whatever under the patents named in said circular. If any attempt should be made to recover damages under said Letters Patent for selling or using Nails of our manufacture, please send the papers to us, and we will guarantee that you suffer no loss whatever. AUSAUBLE HORSE NAIL CO.

Sargent & Co. have issued, under date of 15th inst., the following revised prices for Fire Sets and kindred goods:

	1877.	1878.	1879.
Dry goods.....	\$2,203,425	\$2,085,637	\$2,592,823
General mde.....	5,071,892	4,212,450	4,834,065

Total for week.....\$7,275,317

Prev. reported.....\$6,298,087

Since Jan. 1.....\$215,800,359

\$181,864,648

\$196,694,766

Included in the imports were items of merchandise valued as follows:

	Quantity.	Value.
Brass goods.....	11	\$1,690
Bronzes.....	5	1,263
Chains and anchors.....	1	1,620
Copper.....	2,889	30,112
Cutlery.....	108	11,354
Guns.....	33	1,620
Hardware.....	53	6,750
Iron, pig, tons.....	600	9,118
Iron, sheet, tons.....	53	3,767
Iron ore, tons.....	5,999	17,370
Iron, other, tons.....	947	18,470
Lead, pigs.....	439	2,707
Lead goods.....	139	22,013
Nails.....	14	5,614
Needles.....	14	645
Old metal.....	7	1,488
Percussion caps.....	7	1,488
Saddlery.....	10	1,488
Steel.....	10	1,488
Silverware.....	3	687
Tin, boxes.....	3,351	114,743
Tin, 4,339 slabs.....	67,071	67,071
Wire.....	3	3,173

REPORTS, EXCLUSIVE OF SPECIE.

For the week ended August 19:

	1877.	1878.	1879.
For the week.....	\$5,781,979	\$6,378,179	\$7,082,348
Prev. reported.....	4,775,154	5,093,430	5,775,418

Since Jan. 1.....\$170,657,133

\$215,811,603

\$204,067,763

REPORTS OF SPECIE.

For the week ended August 16:

	1877.	1878.	1879.
Total for the week.....	\$108,903	\$108,903	\$108,903
Previously reported.....	117,370,978	117,370,978	117,370,978

Total since January 1, 1879.....\$1,846,001

Same time in 1878.....10,029,472

" 1877.....21,833,464

" 1876.....30,028,749

" 1875.....63,232,402

" 1874.....30,609,470

" 1873.....38,825,449

" 1872.....55,800,431

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6%.....	121	122
U. S. 6% 1880 registered.....	102 1/2	103 1/2
U. S. 6% 1880 coupon.....	102 1/2	103 1/2
U. S. 6% 1881 registered.....	104 1/2	105 1/2
U. S. 6% 1881 coupon.....	104 1/2	105 1/2
U. S. 5% 1881 registered.....	102 1/2	103 1/2
U. S. 5% 1881 coupon.....	102 1/2	103 1/2
U. S. 4% 1881 registered.....	104 1/2	105 1/2
U. S. 4% 1881 coupon.....	104 1/2	105 1/2
U. S. 4% 1892 registered.....	101 1/2	102 1/2
U. S. 4% 1892 coupon.....	101 1/2	102 1/2

The following were the closing quotations of active stocks:

	Bid.	Asked.
American District Telegraph.....	63	64
Atlantic and Pacific Telegraph.....	35 1/2	36
Bur. Cedar Rapids & North.....	50 1/2	51 1/2
Canadian Southern.....	58 1/2	59 1/2
Canton.....	43 1/2	44 1/2
Cleve, Col. Cin. and Ind.....	50	51
Cleveland and Pittsburgh.....	98 1/2	99 1/2
Chic. St. Paul and Minn.....	40 1/2	41 1/2
Chicago and Alton.....	91	92
" Pref.....	114	115
Delaware, Lack. and Western.....	57 1/2	58 1/2
Delaware and Hudson Canal.....	47 1/2	48 1/2
Express-Atlantic.....	40 1/2	41 1/2
" American.....	40 1/2	41 1/2
" United States.....	43	44
" Wells, Fargo & Co.....	98 1/2	99 1/2
Eric.....	40 1/2	41 1/2
" Pref.....	40 1/2	41 1/2
Fort Wayne.....	112 1/2	113 1/2
Hannibal and St. Joseph.....	19 1/2	20 1/2
" Pref.....	41 1/2	42 1/2
Homestead.....	86 1/2	87 1/2
Illinois Central.....	86 1/2	87 1/2
Ind., Cincinnati and Lafayette.....	3 1/2	4
Kansas Pacific.....	57	58
Kansas and Texas.....	26	27
Lake Shore.....	84 1/2	85 1/2
Louisville and Nashville.....	53 1/2	54 1/2
Michigan Central.....	82	83
Morris and Essex.....	45	46
Manhattan Railway.....	45	46
New Jersey Central.....	50 1/2	51 1/2

the price at which car-load lots are being sold, and for small lots, \$2.40 @ \$2.50 is asked. The advance seems to have stimulated the market, and we hear of improved inquiry. The tendency, judging from the fact that makers, even at the new price, are unwilling to book heavy orders for future delivery, seems to be still upward. We quote 10d. to 60d., \$2.35 @ \$2.50, according to quantity.

C. W. Dunlap & Co., No. 43 Chambers street, have issued, under date of 1st inst., the following discount sheet and appendix to their catalogue of August 1, 1877:

August 1, 1879.

All previous discounts are hereby made void. Prices subject to changes of the market without notice. An additional special discount of 5 per cent. will be allowed only on condition of payment being made on receipt of goods. All bills unpaid at the end of each month will be subject to draft at sight for full amount of invoice. Payments must be made with funds paid in New York.

	Discount.
Chisel Handles.....	10
Common Pattern Chisel Handles.....	10
Socket Firmer.....	10
" Framing.....	10
File Handles.....	10
Screw Driver Handles.....	10
Soldering Copper Handles.....	10
Brad Awl Handles.....	10
Sewing Awl Handles.....	15
Pegging Awl Handles.....	15
Engravers' Tool Handles.....	Net
Auger Handles.....	10
Hammer.....	10
" None Shaped.....	10
Ferrules.....	10
Saw Handles.....	10
" Plane.....	10
Saw Screws.....	10
Door Stops.....	15
Mallets.....	10
Bung Starts.....	10
Screw Drivers, No. 1.....	15
" No. 2.....	15
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the course that the companies will take. Nothing appears as yet to have been done in regard to a general suspension, and from the apparent feeling among the managers of the trade, there seems to be little probability that they will be able to come to an understanding. In the mean time it is rumored that one of the large companies intends to test the market very shortly by offering a large quantity of Coal at auction. Should such a thing take place, it is evident, according to the slang of the trade, that the "bottom" would be knocked out entirely. At the present time there seem to be no quotations, dealers being very generally willing to sell for what they can get. In general they will not let the price stand between them and a sale. Coal has been sold during the past week at prices ranging from 5 cents above down to the actual figures of the last sale, which were \$2 for Grate, \$2.12 1/2 for Egg and \$2.32 1/2 for Chestnut. In some instances cargoes were gladly disposed of at the figures of the sale. Lehigh quotations are nominally \$3.30 for Lump, \$2.75 for Broken Egg and Stove, \$2.60 for Chestnut. Stove and Chestnut command "very liberal discounts." These figures are shaded to the extent of 25 cents at least, although nominally only 15 cents are taken from the quotations. Freight to Boston show an advance of 5 cents over last week, the present quotation being \$1.10. Further East the rates are considerably below this figure, owing to the fact that return freights are easily obtainable. Providence is 85 cents, with other sound ports in the usual proportions.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending August 19, 1879:

Hamburg.	Value.	Falmouth.	Value.
Pt. m., gals. 44,577	\$44,730	Pt. m., gals. 248,660	17,415
Pumps, pkgs. 6	446	Newcastle.	
Slates, cs. 30	100	Pt. m., gals. 136,190	11,400
Pl'd ware, cs. 3	205	Plymouth.	
Ag. imp., cs. 7	36	Pt. m., gals. 50,650	4,305
Hdw., pkgs. 73	1,792	Cork.	
Glass w. pgs. 15	225	Pt. m., gals. 167,567	14,653
Belting, pkgs. 23	4,086	Queensdown.	
Sew. mach., cs. 454	7,835	Pt. m., gals. 349,326	26,300
Mach'y, pkgs. 34	2,290	Londonderry.	
Mf. iron, pkgs. 45	2,027	Pt. m., gals. 122,550	9,804
Stettin.		Belfast.	
Pt. m., gals. 93,671	73,408	Pt. m., gals. 257,860	21,000
Glass w. pgs. 5	100	Galway.	
Ag. imp., cs. 7	72	Pt. m., gals. 153,200	11,900
Danish West Indies.		Sligo.	
Glass, bxs. 10	70	Pt. m., gals. 90,000	7,200
Pt. m., gals. 2,917	303	Glasgow.	
Nails, kegs. 11	43	Ag. imp., pkgs. 32	623
Wire, reels. 11	123	Mach'y, cs. 11	259
Mach'y, pkgs. 7	120	Mf. iron, pkgs. 12	309
Hdw., pkgs. 32	912	Belting, bales. 2	\$241
Bristol.		Tinware, cs. 3	100
Glass w. pgs. 2	50	Car wheels. 180	80
Ag. imp., cs. 2	230	Hdw., cs. 6	80
Hdw., pkgs. 7	150	British West Indies.	
Pumps, pkgs. 1	60	Pt. m., gals. 9,323	1,002
Met. goods, cs. 11	850	Coal, tons. 72	203
Mach'y, pkgs. 11	85	Arms, cs. 5	285
Pl'd ware, cs. 1	25	Arms, cs. 10	285
Iron pipe, pos. 738	3,600	Gun wads, cs. 9	166
Sew. mach., cs. 40	705	Morris, L. W.	590
Ag. imp., pkgs. 23	343	Ass'n's, bxs. 3	60
Glass w. pgs. 2	100	Mf. iron, pkgs. 50	1,000
Mf. iron, cs. 2	100	Pl'd ware, cs. 1	100
British North American Colonies.		Ass'n's, bxs. 3	60
Coal, tons. 600	2,200	Sew. mach., cs. 11	274
Hdw., cs. 23	344	Hdw., cs. 82	1,180
Glass w. pgs. 23	344	Ag. imp., pkgs. 4	28
British East Indies.		Ass'n's, bxs. 3	60
Pt. m., gals. 220,000	33,713	Sew. mach., cs. 11	274
Haere.		Hdw., cs. 82	1,180
Copper, sks. 180	530	Ag. imp., pkgs. 4	28
Pl'd ware, cs. 2	810	Ass'n's, bxs. 3	60
Sew. mach., cs. 17	4,000	Sew. mach., cs. 11	274
Ag. imp., pkgs. 23	343	Hdw., cs. 82	1,180
Lub. oil, bbls. 125	400	Ag. imp., pkgs. 4	28
Pumps, pkgs. 1	60	Ass'n's, bxs. 3	60
Mach'y, pkgs. 1	550	Sew. mach., cs. 11	274
Cadiz.		Hdw., cs. 82	1,180
Pt. m., gals. 32,000	2,938	Ag. imp., pkgs. 4	28
Hdw., bxs. 1	415	Ass'n's, bxs. 3	60
Alexandria.		Sew. mach., cs. 11	274
Pt. m., gals. 137,000	13,892	Hdw., cs. 82	1,180
Porto Rico.		Ag. imp., pkgs. 4	28
Pt. m., gals. 6,119	592	Ass'n's, bxs. 3	60
Glass w. pgs. 1	20	Sew. mach., cs. 11	274
Railroad. 1	2,979	Hdw., cs. 82	1,180
Mf. iron, pkgs. 6	74	Ag. imp., pkgs. 4	28
Liverpool.		Ass'n's, bxs. 3	60
Pt. m., gals. 300,155	13,870	Sew. mach., cs. 11	274
Ag. imp., pkgs. 15	1,127	Hdw., cs. 82	1,180
Guns, cs. 1	20	Ag. imp., pkgs. 4	28
Mach'y, pkgs. 8	780	Ass'n's, bxs. 3	60
Met. goods, cs. 10	1,600	Sew. mach., cs. 11	274
I. balls, cs. 1	400	Hdw., cs. 82	1,180
Lub. oil, gals. 3,324	1,310	Ag. imp., pkgs. 4	28
Hdw., pkgs. 17	9,575	Ass'n's, bxs. 3	60
Sew. mach., cs. 848	11,790	Sew. mach., cs. 11	274
Silverware, cs. 4	1,730	Hdw., cs. 82	1,180
Wringers, cs. 12	484	Ag. imp., pkgs. 4	28
Met. gds., pkgs. 20	2,700	Ass'n's, bxs. 3	60
London.		Sew. mach., cs. 11	274
Lub. oil, gals. 43,908	7,123	Hdw., cs. 82	1,180
W. mills, pkgs. 15	500	Ag. imp., pkgs. 4	28
Ox. zinc, bbls. 100	712	Ass'n's, bxs. 3	60
Glass w. pgs. 23	344	Sew. mach., cs. 11	274
Hdw., pkgs. 261	5,498	Hdw., cs. 82	1,180
Mf. iron, pkgs. 27	532	Ag. imp., pkgs. 4	28
Mach'y, pkgs. 88	5,247	Ass'n's, bxs. 3	60
Pt. m., gals. 379,177	29,577	Sew. mach., cs. 11	274
Ag. imp., pkgs. 5	233	Hdw., cs. 82	1,180
Sew. mach., cs. 25	730	Ag. imp., pkgs. 4	28
Wire goods, cs. 1	100	Ass'n's, bxs. 3	60
Rifles, cs. 1	300	Sew. mach., cs. 11	274
Pumps, pkgs. 5	100	Hdw., cs. 82	1,180
Pl'd ware, cs. 1	150	Ag. imp., pkgs. 4	28
Glass w. pgs. 1	100	Ass'n's, bxs. 3	60
Slates, cs. 100	337	Sew. mach., cs. 11	274
Blaye.		Hdw., cs. 82	1,180
Pt. m., gals. 301,196	15,060	Ag. imp., pkgs. 4	28
Christiansand.		Ass'n's, bxs. 3	60
Pt. m., gals. 20,412	14,563	Sew. mach., cs. 11	274
Stockholm.		Hdw., cs. 82	1,180
Pt. m., gals. 145,438	12,347	Ag. imp., pkgs. 4	28
Christiania.		Ass'n's, bxs. 3	60
Pt. m., gals. 103,180	8,248	Sew. mach., cs. 11	274
Bremen.		Hdw., cs. 82	1,180
Pt. m., gals. 767,113	48,697	Ag. imp., pkgs. 4	28
Ag. imp., pkgs. 19	789	Ass'n's, bxs. 3	60
Hdw., cs. 1	245	Sew. mach., cs. 11	274
Burners, cs. 1	200	Hdw., cs. 82	1,180
Castings, pkgs. 25	1,150	Ag. imp., pkgs. 4	28
Sew. mach., cs. 10	650	Ass'n's, bxs. 3	60
Belting, cs. 4	558	Sew. mach., cs. 11	274
Lub. oil, gals. 10,995	2,639	Hdw., cs. 82	1,180
Mf. iron, pkgs. 6	299	Ag. imp., pkgs. 4	28
Pumps, pkgs. 4	50	Ass'n's, bxs. 3	60
Rotterdam.		Sew. mach., cs. 11	274
Pt. m., gals. 171,879	13,533	Hdw., cs. 82	1,180
Dutch East Indies.		Ag. imp., pkgs. 4	28
Pt. m., gals. 248,200	26,000	Ass'n's, bxs. 3	60
Antwerp.		Sew. mach., cs. 11	274
Pt. m., gals. 307,714	21,500	Hdw., cs. 82	1,180
Great Yarmouth.		Ag. imp., pkgs. 4	28
Pt. m., gals. 142,170	9,930	Ass'n's, bxs. 3	60

Mach'y, pkgs. 228	7,555
Glass w. pgs. 339	2,661
Ag. imp., pkgs. 28	763
Arms, cs. 14	1,219
Insulators, cs. 21	337
Nails, kegs. 29	31
Zinc, csks. 3	131
Notions, cs. 14	898
Mf. iron, pkgs. 185	2,074
Sew. mach., cs. 180	4,935
Powder, lbs. 400	70
Hayti.	
Pt. m., gals. 18,300	1,818
Hdw., pkgs. 48	1,015
Cartridges, cs. 3	675
Cartridges, cs. 7	247
Sew. mach., cs. 7	139
Mach'y, pkgs. 191	6,470
Nails, kegs. 57	200
Mf. iron, pkgs. 5	49
Glass w. pgs. 5	96
Tinware, cs. 5	52
Mach'y, pkgs. 25	238
Revolvers, cs. 2	443
Trieste.	
Pt. m., gals. 163,800	11,100
Bilbao.	
Pt. m., gals. 150,000	8,500

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending August 19, 1879:

Hardware.	Value.	Metals.	Value.
American Meter Co.,		Mach'y, cs. 14	
Mds., pkgs. 1		Per. caps, cs. 3	
Barbour Bros.,		Vices, cs. 1	
Machinery, cs. 7			
Bloom, Nath'l,		Ashby, Morris,	
Bolker, Hermann & Co.		Roll'd zinc, csks. 25	
Hdw., cs. 143		Baring Bros. & Co.	
Hdw., csks. 9		Tin plates, bxs., 344	
Burckinslaw, W. C.		Brown Bros. & Co.	
Hdw., cs. 4		Tin, slabs, 498	
Carey, S.		Bruce & Cook,	
Grindstones, csks. 13		Tin plates, bxs., 174	
Steel wire, bbls., 116		Byrne, Joseph & Co.	
Collector of Customs,		Tin plates, bxs., 500	
Iron safes, 7		Cort, N. L. & Co.	
Dreyfuss, Weiler & Co.		Tin plates, bxs., 82	
Hdw., cs. 6		Harley, Geo. & Co.	
Eddy Geo. M. & Co.		Zinc, bales, 4	
Mds., pkgs. 1		Hinnerman, W.	
Ely & Wray,		Zinc dust, csks. 10	
Hdw., cs. 1		Lamar, H.	
Folsom, H. & D.		Roll'd zinc, csks. 150	
Mds., pkgs. 4		Meyer, G. A. & Co.	
Fuller Bros.		Ex. zinc, bbls. 135	
Graef Cutlery Co.		Ex. zinc, cs. 20	
Mds., pkgs. 6		Naylor & Co.	
Herrmann H. & Co.		Tin plates, bxs., 3373	
Mds., pkgs. 35		Phelps, Dodge & Co.	
Anvil, 75		Tin plates, bxs.,	
Hoe, R. & Co.		Pratt, Chas. & Co.	
Mds., pkgs. 3		Tin plates, bxs., 177	
Howard Bros.,		Simpson, T. J.	
Lamar, H.		Old copper, pkgs. 12	
Arms, cs. 2		United States Stamping	
Livingstone W. & F.		Tin plates, bxs., 339	
Grinding stones, 82		Western Transportation	
Livingstone, M.		Tin plates, bxs., 230	
Hdw., cs. 1		Wheeler, E. H. & Co.	
Mason, John W.		Tin plates, bxs., 19	
Wire rope, reels, 4		Whorl, 1345	
Wire rope, coils, 5		Splitter, plates, 2429	
McGoy & Co.		Tin andterne plates,	
Mds., pkgs. 4		bxs. 2199	
Hdw., cs. 4		Tin plates, bxs., 8004	
Nails, bags, 28		Tin, slabs, 1022	
Montgomery, M.			
Moore's J. P. Sons,		Iron.	
Empty cartridge		Baring Bros.	
cases, cs. 5		Bars, 4250	
Arms, cs. 10		Brown Bros. & Co.	
Gun wads, cs. 9		Wire rods, coils, 258	
Morris, L. W.		Elliott, M. M. Sons & Co.	
Ass'n's, bxs. 3		Ore, tons, 2130	
Mout, Jas. T.		Galvey & Casado,	
Hdw., pkgs. 3		Ore, tons, 115	
Oxley, Wm.		Henderson Bros.	
Press, cs. 1		Pig, tons, 100	
Prosser, Thos. & Son,		Lundberg Gustav,	
Mds., pkgs. 19		Bars, 1125	
Rogers, Henry,		Marvel Wm. D.	
Mds., pkgs. 3		Ass'n's, bxs. 1494	
Schoverling, Daly &		Nevada Bank of San	
Gales,		Francisco,	
Arms, cs. 9		Pig, tons, 200	
Hdw., cs. 4		Page, Nellie & Co.	
Mds., pkgs. 10		Bars, 6	
Schuyler, Hartley &		Barkins, Livingston,	
Graham,		& Co.	
Mds., pkgs. 6		Kilgus, 15,000	
Smith, Alex. & Sons,		Seligmans, J. W. &	
Carpet Co.,		Co.	
Machinery, cs. 11		Rails, 6320	
Smith, H. B. Mach. Co.		Williamson Jas. & Co.	
Machinery, cs. 1		Pig, tons, 200	
Sussfeld, Lorsch & Co.		Order.	
Wire, csks. 9		Bars, 8019	
Tapscott Bros. & Co.		Old nails, 263	
Machinery, cs. 1		Old scrap, tons, 104	
Thompson C. M.		Pig tons, 151	
Wire, csks. 9		Plates, 13	
Tillotson, L. G. & Co.		Railroad iron, tons,	
Wire, Lts. 52		150	
Ward, Aseline,		Rail crops, tons, 90	
Hdw., cs. 1		Scrap, tons, 175 1/2	
Wiebusch & Hilger		Sheet iron, bbls., 109	
Hdw., cs. 1		Spiegelstein, tons,	
Hdw., pkgs. 13		370 1/2	
Witte John G. & Bro.		Wire rods, bbls., 660	
Mds., pkgs. 7			
Wolf H. & Co.		Steel.	
Hdw., cs. 1		Naylor & Co.	
Mds., pkgs. 1		Old steel rails,	
Wolff S. N. & Co.		pieces, 273	
Mds., pkgs. 1		Wolf, R. H. & Co.	
Order.		Bundles, 33	
Anvils, 165		Woodford W. O.	
Caps, cs. 15		Bars, 54	
Cutlery, cs. 2		Bundles, 167	
Files, csks. 2		Cases, 11	
Guns, cs. 4		Order.	
Hdw., cs. 44		Bars, 7	
Hdw., csks. 6		Bundles, 162	
Hdw., pkgs. 9		Cases, 2	
Ironware, pkgs. 9		Casks, 51	
		Scrap, tons, 310 1/2	

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, August 19, 1879.

Pig Iron.—The market shows but little change since last week, although prices are still hardening under a heavy demand and light supplies. There appears to be an absolute scarcity of known brands, and it is a matter of considerable difficulty to place orders of any magnitude. We are informed that several furnaces about going in blast have already placed their product for some months to come, and in one case a furnace not yet lighted, and a long time out of use, has sold its first three months' product at full prices, and declined similar offers for large amounts additional. There is, unquestionably, a heavy consumption going on, and likely to be, but sales, instead of being, as formerly, for immediate use, are very largely to meet future contingencies. Until recently sellers had to force the market to get rid of their products. The majority of consumers bought as required from week to week, and no more, whereas now all classes, in addition to their increased legitimate requirements, have bought, or are endeavoring to buy to cover their wants for the balance of the year. Still there is no immediate reason to apprehend any break in prices, but we have the best authority for stating that production is fully equal to consumption and can still be largely increased; so that the buying movement is, to a great extent, of a speculative character. Still the fact remains that Pig Iron is scarce for the time being, and so long as buyers are eager to place their orders prices will be maintained, and perhaps advance still further. Advices from abroad are encouraging, and any strengthening of the English market will, no doubt, be strongly sympathized in on this side. Sales have been at higher prices, on an average, and a large business is reported on Western account. We quote as follows: No. 1 Foundry, \$21 @ \$22.50; No. 2 Foundry, \$19 @ \$19.50; Gray Forge, \$18.50 @ \$19.50; Mottled, \$17 @ \$18; Hot Blast Charcoal, \$25 @ \$28; Cold Blast Charcoal, \$32 @ \$35.

Muck Bar.—Prices are again higher, and sales have been at \$34 @ \$34.50 at mill. Holders now ask higher prices, and \$34.50 @ \$35 are probably the lowest figures at which business could be done. No large lots are offered, and in some cases manufacturers ask \$36. We quote the market very firm.

Blooms.—There is more activity, and sales are easily made at inside quotations. Holders are looking for higher prices, and are not disposed to sell unless at full market rates, which are about as follows: Sunken Scrap Blooms (24 1/2 lb), \$38 @ \$39; Northern Ore Blooms (22 1/2 lb), \$33 @ \$37; Best quality Charcoal Billets (22 1/2 lb), for wire and steel purposes, \$58 @ \$60; Bars do., \$62.50 @ \$65; Sheet Iron Blooms, cornered (24 1/2 lb), \$53 @ \$55; Cold-blast Charcoal Plate Blooms, \$50 @ \$53; run-out Anthracite, \$45 @ \$47.50.

Structural Iron.—The demand continues active, and prices are again firmer with average sales, at a slight advance on last week's quotations. We have no special transactions to report, but all the mills are busy and have more applications for work than they can well attend to. Prospects are in all respects encouraging, and with a continued press of orders and increasing cost of production, higher prices are likely to prevail as the season advances. We quote: Angles, 2 1/2 @ 2 7/8; Tees, 2 7/8 @ 2 8/8; Beams and Channels, 2 8/8 @ 3 1/8, according to specification.

Plate and Tank Iron.—In this department we have again to note great activity, and in some instances it has been found impossible to place orders for large lots, unless by dividing with two or three mills. With the amount of work on hand, and prospects of steady demand in the near future, prices are very firm, with a strong upward tendency. Sales during the week have been quite heavy at about the following rates: Skelp, 2 1/2 @ 2 7/8; Sheared,

ST. LOUIS.

St. Louis, Mo., August 18, 1879.

Pig Iron.—The excited condition of the market, the uneasiness of buyers and the very short supply of metal makes it impossible to quote correctly. Our quotations, therefore, are in some cases lower than makers would, at this writing, be willing to accept.

CHARCOAL HOT BLAST.

Missouri.....	\$21.00 @	30.00
Southern.....	22.00 @	30.00
Hanging Rock.....	24.00 @	30.00

COKE AND COAL.

Missouri.....	None offering	
Southern.....	20.00 @	30.00
Ohio River.....	22.00 @	30.00
Jackson County.....	22.00 @	30.00
Hocking Valley.....	22.00 @	30.00
Anthracite.....	23.00 @	30.00

COLD BLAST.

Missouri.....	27.00 @	30.00
Southern.....	27.00 @	30.00
Ohio.....	27.00 @	30.00

IRON ORE.

Iron Mountain.....	5.50 @	30.00
Southwest.....	4.75 @	30.00
Ore for fire.....	5.50 @	30.00

OLD RAILS AND CAR WHEELS.

Rails.....	24.50 @	30.00
Wheels.....	31.00 @	30.00

BOSTON.

AUGUST 16.—The iron market continues firm with prices still showing an upward tendency, and there is an active inquiry for all grades. Pig iron continues to strengthen, and the actual advance in price since the rising tendency in the iron market set in has been \$3.50 to \$4.00 per ton. Owing to the present high prices of old rails, pig iron is in many instances substituted, and the consumption of the latter consequently very sensibly increased. There continues to be a light supply of No. 1 X, for which buyers are compelled to pay a high price. Most furnaces are close sold up, and some have contracts booked which will absorb their production for the balance of the year. Business for prompt or near-by delivery has consequently been limited. The furnaces, as a rule, will only take orders at such figures as may be current in the open market at time of shipment, and are not inclined to name a price for future delivery. We quote spot lots of pig iron scarce and firm at \$24 for No. 1 X, and \$21 for No. 2 X. Freight to Boston, \$1.25. Sales of pig iron at the shipping ports to come to Boston \$20.50 to \$21.50 for No. 1 X; \$19.50 to \$20 for No. 2 X; \$17.50 to \$18.50 for Gray Forge, and \$16.50 to \$17.50 for White and Mottled. The advanced prices now ruling in domestic pig combined with the difficulty of placing orders has caused considerable of an inquiry for Scotch pig. Cable advices report an advance in the primary market. The quotations for trade lots of Scotch pig to arrive here are: Coltness, \$22.50 to \$23; Eglington, \$20 to \$20.50; Glengarnock, \$21.50 to \$22; Summerlee, \$21, and Cambro, \$21. Manufactured iron.—The mills are very full and prices very firm; bars are in active request and firm at the late advance, say \$1.95 to \$2.25. Store lots are selling at \$2.10 to \$2.25 with a continued rising tendency. Holders are very firm at our quotation, and the tendency of the market is toward a higher range of values. Plate and Tank iron are active and firm, tank being very firm indeed. Stock plate sells at the usual difference above our quotation. We quote \$2.55 to \$2.62 1/2 for Common; \$2.75 to \$2.87 1/2 for C. No. 1; \$3 to \$3.12 1/2 for Shell, and \$3 to \$3.12 1/2 for Flange. Sheet iron continues to show a rising tendency, and still higher prices are looked for. We quote Boston store prices: 3/8 to 3/4 for single Common, and 3/4 to 3/8 for double do.; 4/8 to 4 1/2 for Refined; 7/8 to 7/4 for Galvanized, Nos. 14 to 20; 7/4 for 1/2 for Russia, perfect, and 1/2 less for do. No. 1 stained. Steel is in fair demand at unchanged prices from the stores, and we continue to quote: American Tool Steel at 1 1/2 to 1 3/4; English do. at 1 1/2 to 1 3/4; American Spring Steel at 5/8 to 6/8; English do. at 7/8 to 8/8; Tire Steel at 3/4 to 4/4; Bessemer Machinery at 4/8 to 5/4; and Cast do. at 6/8. New Rails.—A Boston order for 10,000 tons of iron rails has been placed with the Spuyten Duyvil Rolling Mills, New York City, at \$40 per ton at mill. The rails are to go to Kansas City, and the orders will keep the mills in question running up to capacity for six months. Previous to the receipt of this order they had lain idle for eight years. Copper continues quiet, and Ingot closes rather nominal at 16 1/2. This figure is for good-sized parcels. Small lots from the Boston stores command 16 1/2 to 17. There is no change in manufactures, and we continue to quote New Sheathing at 22 1/2; Braziers at 24 1/2 to 26; and Bolts at 24 1/2; Yellow Metal Sheathing sells at 13 1/2 to 14 for American and 12 1/2 for English, in bond. Lead shows no change. The leading cause of the present firmness in the face of a light demand is the concentration of the stock in the hands of a few large holders. Large lots of pig are quoted at 4.10 to 4.15. Small lots of pig from store are firm at 4 1/2 to 5. Manufactures are unchanged, and we quote: Lead Pipe, 5/8 to 1 1/2; Tin-lined Pipe, 1 1/2; Bar Lead, 6/8; Sheet Lead, 6/8; Block-Tin Pipe, 30¢; all of these are subject to the usual trade, or 10 % discount. The Boston Lead Mfg. Co. have fixed the discount on Copper pumps and fixtures at 30%. Antimony is still in light demand at 11 1/4 for large lots, and 12¢ for smaller parcels. Spelter is quiet at 5¢ to 5 1/2. Sheet Zinc is very scarce and in active demand at 7¢ to 7 1/2. The mill is overrun with orders. Tin has met with a slight advance and we quote large lots of Straits 15 1/2 to 16; and smaller lots as below. We quote: Straits, 15¢ to 16¢; Banca, 18 1/2 to 19¢; English L. & F., 15 1/2 to 16¢. We quote Plate Charcoal I. C., \$6.25 to \$6.75; Coke, \$5.25 to \$5.75; and Charcoal Terne, \$6 to \$7.50.—Commercial Bulletin.

BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of Aug. 18: Manufactured iron has again advanced all along the line, and we now quote ordinary sizes Refined Bars firm at 2 2-10¢

23-10¢, with strong indications of still higher figures ruling in the near future.

Ref. Bar Iron, 2 to 6 by 3/4 to 1 1/2 @ 2 2-10¢ to 2 3-10¢

" 1 to 4 1/2 by 1 1/4 to 2 1/2 @ 2 2-10¢ to 2 3-10¢

" 3/4 to 2, Round @ 2 2-10¢ to 2 3-10¢

And Square, 2 1/2 to 2 3/4 @ 2 2-10¢ to 2 3-10¢

Hoop Iron, 1 1/4 wide and upward, @ 2 1/2 to 2 3/4

Band Iron, from 1 1/4 to 4 in. wide, @ 2 1/2 to 2 3/4

Horse-shoe Iron, @ 3 to 3 1/2

Norway Nail Rods, @ 4 1/2 to 5 1/2

Black Diamond Cast Steel, @ 7 1/2 to 8 1/2

Machinery Steel, @ 7 to 8

Cast Spring Steel, @ 4 1/2 to 5 1/2

Homogeneous Steel Plate, @ 5 to 5 1/2

Common Horse Nails, @ 10 to 14

R. R. Spikes, 5/8 to 1 1/2, @ 2 1/2 to 2 3/4

Perkins' Horse shoes, 1/2 keg of 100 lbs., @ 3 1/2 to 3 3/4

Mule shoes, @ 4 1/2 to 4 3/4

Putnam Horse Nails, @ 10 to 14

Globe Horse Nails, @ 10 to 14

Less list discount to the trade

Messrs. R. C. HOFFMAN & Co., Iron and

Commission Merchants, No. 23 South Frederick street, report the pig iron market as follows, under date of Aug. 18: Below we quote present prices for pig iron and blooms, with active demand and prices advancing. We quote as follows:

Baltimore Charcoal Wheel Iron, @ 26.00 to 29.00

Virginia, @ 27.00 to 30.00

Anthracite No. 1, @ 21.00 to 22.00

" No. 2, @ 19.00 to 20.00

" No. 3, @ 17.00 to 18.00

" Mottled and White, @ 16.00 to 17.00

Charcoal, C. B. Blooms, @ 30.00 to 31.00

Cut Billets, @ 27.50 to 28.50

Refined Blooms, @ 45.00 to 47.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of Aug. 18: I quote a decidedly firm market, with no change in quotations. Foundry irons are meeting with ready sales in small lots. About 600 tons pig iron sold on furnace bank at an equivalent to quotations here. I quote as follows:

American Scotch Pig Iron, @ 23.50

Anthracite No. 1, @ 21.00 to 22.50

" No. 2, @ 19.50 to 21.00

" No. 3, @ 17.50 to 19.00

" Mottled, @ 17.00 to 18.00

Coke, No. 1, @ 20.00 to 21.00

" No. 2, @ 19.00 to 20.00

Ya. Cold-blast Charcoal, @ 23.00 to 24.00

Ya. Cold-blast Charcoal, @ 23.00 to 24.00

Ya. Warm-blast " Red-short, @ 17.00 to 18.00

Old Rails, @ 23.00 to 24.00

Wrought Scrap No. 1, @ 18.00 to 19.00

Cast " (machinery), @ 17.00 to 18.00

Richmond Refined Bar Iron, @ 2 2-10¢ to 2 2-15¢

Freights to Philadelphia, \$1.50 per ton of 2400 lbs. by rail.

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of Aug. 18, write as follows: The demand has been active at the advanced rate, which does not appear to check the readiness of buyers to take hold largely. Prices have advanced \$2 to \$3 per ton during the week, and the tendency is strongly upward. The mills report they are having no difficulty in maintaining the advance made, and are booking all the orders they care to take. The impression generally prevails that the fall trade will develop more good things for the iron business, and the feeling is very hopeful, with a decided disinclination on the part of sellers to make further engagements for delivery at present rates. The following quotations show as nearly as possible the actual range of the market.

HOT-BLAST FOUNDRY.

Hanging Rock C. C. No. 1, @ 25.00 to 27.00

C. C. No. 2, @ 24.00 to 26.00

Alice Coke, No. 1, @ 23.00 to 25.00

" No. 2, @ 22.00 to 24.00

Southern Coke No. 1, @ 23.00 to 24.00

" No. 2, @ 22.00 to 23.00

Ohio Stone Coal, No. 1, @ 20.00 to 21.00

" No. 2, @ 19.00 to 20.00

FOURTEEN IRONS.

Hanging Rock, No. 1 C. C., @ 25.00 to 27.00

Strong Neutral No. 1 Coke, @ 21.00 to 22.00

Southern Charcoal, @ 23.00 to 24.00

Coke, @ 23.00 to 24.00

Cold-Short, No. 1, @ 20.00 to 21.00

CAR WHEEL AND MALLEABLE.

Hanging Rock C. C., @ 30.00 to 31.00

Southern Western Brands, @ 30.00 to 31.00

Peckham's Patent C. C. Refined Steel, @ 30.00 to 31.00

Blooms, @ 30.00 to 31.00

Peckham's Pat. C. C. Refined Double, @ 30.00 to 31.00

Hammered Flange Blooms, @ 30.00 to 31.00

Old Rails, scarce, @ None offering

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Aug. 16, write us as follows: The market continues active and excited. Nearly everything offered at reasonable figures is accepted. Most consumers are pretty well stocked with iron for the next four or five months ahead, many of them into next year. We advance quotations on all grades. The usual time, 4 months, is allowed on quotations below:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal, @ 22.00 to 24.00

No. 2, @ 21.00 to 23.00

No. 1 Southern, Charcoal, @ 21.00 to 23.00

No. 2, @ 20.00 to 22.00

No. 1 Hanging Rock, Stonecoal and Coke, @ 20.00 to 21.00

No. 2 Hanging Rock, Stonecoal and Coke, @ 19.00 to 20.00

No. 1 Southern, Stonecoal and Coke, @ 19.00 to 20.00

No. 2, @ 18.00 to 19.00

" American Scotch " @ 18.00 to 19.00

Silver Gray, @ 18.00 to 19.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutrl, @ 19.00 to 20.00

No. 1 Stonecoal and Coke, Cold-short and Neutrl, @ 18.50 to 19.00

No. 2 Stonecoal and Coke, Cold-short and Neutrl, @ 17.50 to 18.00

No. 1 Missouri and Indiana Red-short, @ 21.00 to 21.50

White and Mottled, Cold-short and Neutrl, @ 16.50 to 17.00

CAR WHEEL AND MALLEABLE.

Hanging Rock, Cold-blast, @ 28.00 to 30.00

Alabama and Georgia, Cold-blast, @ 28.00 to 30.00

Kentucky, Cold-blast, @ 28.00 to 30.00

W. B. BELKNAP & Co., iron and hardware

merchants, Nos. 113 and 115 West Main street, under date of Aug. 18, write as follows:

We have again to report a buoyant market. The action of the Western Association at Cincinnati last week found an immediate response here; \$2.20 card was a fixed fact as soon as the news had time to travel thus far. A jump of from \$4 to \$6 per ton seemed a rather violent one, but the makers say there is no help for it with pig pushing behind. It is the scriptural episode reversed. While mail orders are coming in freely, it is evident, as is reported by travelers, that many minor dealers have no faith in the permanency of the advance, and so decline to buy except for immediate wants, while they use their stock up as close as possible. This is desirable, for presently these will be forced to buy and so the demand be kept regular. Nothing could be more opportune for the iron interests of the

South than this revival. The demand for new furnaces and mills will naturally call attention to the region just developing in South Tennessee, Northern Alabama and Georgia. Lowthian Bell's prediction may find speedy realization, and we may soon see Bars and Sheet and Nails move northward instead of southward. The negro exodus, while it works hardship to certain sections for the time being, may end in opening up fields of profitable labor to white immigrants. Then we shall find more factories and more farms and closer cultivation. We want to get rid of the yellow fever "germs" and the shot gun as a political factor, and a great future for the illimitably productive South is assured.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., Aug. 4, 1879.

THE OUTLOOK.

generally may be said, perhaps, to be a trifle less gloomy than it has recently been. There is certainly but little to speak or write of in the shape of hard facts in support of the slightly improved tone, save that there is a somewhat better tone in the iron markets, and a more hopeful expectation as to the possibilities of the immediate future. It is difficult to trace out this alteration to its source or sources, but I think we may attribute it to the finer weather which prevailed last week, and the consequent beneficial effects on the crops. Hitherto harvest prospects have been most gloomy, but the eight or nine days' heat and sun we have had has already worked great changes. Another fortnight's fine weather would be millions of money in our pocket, as a nation, and would tend to give the whole of our great industries the encouragement and stimulus they all so greatly need. Yesterday, however, we had a tropical thunderstorm, which was very severe along the southern midlands and across the country just north of London, and which was accompanied by rains that have caused floods in many places. These floods have not only damaged an immense acreage of ungathered hay, but have bodily carried it off in hundreds of instances. The hailstones, too, in many localities were three-fifths of an inch in diameter, and literally mowed the crops down for miles. The only hope we have is that the storm may not have been universal throughout the kingdom, but that its effects may have been localized. All accounts, so far received, unite in describing the electrical display as unparalleled here for many years. Personally I have rarely seen such incessant lightning—every second for four or five hours.

OUR CAPE NEWS.

this morning is very hopeful in its tone, and ought to do something to counterbalance the shortcomings of the clerk of the weather. If, as we learn by cable, Cetawayo has been deposed and sent to the right about, the Zulu nation split up and the chiefs in submission, we may not unreasonably infer that the war is at an end, and that we shall be relieved from trouble and expense thereabout. The probabilities are that for some time to come our possessions in South Africa will be exceedingly good customers. In metal the traders and settlers have not lost a penny by this war, the cost of which the home government will bear. This is not all, as the colonists have made enormous prices of everything they had to sell or let in the shape of oxen, cattle, forage, &c.; indeed, I am told that nearly half the population in Pietermaritzburg, Pretoria, &c., have cleared as much money during this brief period of high prices and confusion as they would have been enabled to secure by 10 years' hard and laborious work. As the colonists have thus enriched themselves, pretty much at our expense, it is not unreasonable to assume that they will expend rather more than usual, and that we shall find them heavy buyers of our hardware, &c. The cessation of the war will, of course, stop the shipments of rifles, guns, ammunition and saddlery to the combatants, but the first three items having been largely supplied by Jewish speculators, their absence from cargoes will not be lamentable. Wall-sail will be affected by the falling off in the demand for accoutrements, as also will Birmingham and London. While writing of the Cape I think I ought to direct your attention to a testimonial as to

THE EXCELLENCE OF AMERICAN PACKING,

which appeared in the *Ironmonger* of August 2d, over the signature of "W. Lord, Somerset East, Cape of Good Hope." After bearing witness to the excellence of the journal just named, Mr. Lord says: "I have from time to time read your remarks, and the correspondence re the encroachments of the American manufactures into our markets; and also, among other things, the correspondence on packing, viz., the difference between English and American. Allow me, as one who has been engaged in the colonial ironmongery trade for upward of 16 years, to touch first upon the former. Not one word that has been said and written on this subject has been exaggerated. I can walk round my own store at the present moment and see finer chisels, files, draw-knives, gouges, auger bits (these they very much excel in), hammers, locks, bolts, axes, hatchets (these are another special line), and many other lines, all packed in neat wood or cardboard boxes, each and all presenting such a style and finish that no English goods hitherto seen by me can hold a candle to them. Of late I have noticed a great improvement in English goods from Ward & Payne, Howarth & Sons and Sorby's; but still there is that difference remaining that shows up the Yankee at once, and customers will have these goods. Port Elizabeth ironmongers are obliged to import them, and the largest ironmonger in Port Elizabeth obtains part direct cargoes of them from the States. Now, I am an Englishman to the backbone, and have long regretted this state of things

and can see no reason for it. As to the packing, I would still urge upon the manufacturer to adopt the box plan. The convenience is immense. I am pleased to see it is coming into use. I have now open on my counter a box of Nettlefold's 1 gross 'Gate' hooks and eyes. The lid comes off, the customer served, the lid on—all in the time it would take to tie a parcel up; and here in our colonies we cannot get trained assistants to do parcels up neatly—do what and say what I will, I cannot. The papers get torn, the labels off, and they soon require rewrapping. Pray keep the matter of boxes before the manufacturers." Thus, I venture to think, is excellent evidence of the advances your manufacturers have made in their methods of putting up hardware. I do not suppose the English merchants and factors like this sort of thing. They are the persons who levy toll on the small manufacturers, and they feel more than any other class the effects of American competition. They usually try to make enormous profits, but the tendencies of the times are wholly against them, and they are not unlikely to grow far less numerous in the course of the next few years. The letter of Mr. Lord may be viewed in another light, and that of more comfort to the British manufacturers. He commends American goods because they are at present better than his can obtain from England, but it is pretty plain that if and when he can buy equally handy packages, &c., from this country, he will (as he states inferentially) revert to the old channels. In this view British houses may perceive more than I have here shadowed out. They may, for instance, demonstrate the continued supremacy of their wares owing to the mere circumstance that, as England is the great colonizer of the world, the new countries will always have a prepossession in our favor.

AMERICAN STAMPING MACHINERY.

is making good headway in this country. So far as I am acquainted with the facts, the only large American house in this line established here is that of Messrs. Bliss & Williams, who are represented in Europe by Mr. A. H. Fancher. At the recent Kilburn show (in London) half the women and many of the men in the show ground were carrying large tin dishes, which were being issued in a regular stream from a press which was running on the ground under Mr. Fancher's superintendence. I hear that the firm are well satisfied with the success they have already had on this side, and that their sales have reached a much higher aggregate than might have been anticipated in so short a time. There seems to be no doubt in the minds of practical men as to the superiority of your deep stamping over the ordinary modes of producing molds, &c., in this country.

SCOTCH PIG IRON.

is in much the same condition as on this day week; indeed, I do not see how there can possibly be any firmness so long as the present enormous stocks continue to increase. With 500 furnaces blowing it will be long before the 288,044 tons in Connal's stores and the 500,000 tons or so in makers' yards can be exhausted. Fluctuations in prices, therefore, will almost certainly be of no great magnitude or importance. The shipments from Middlesboro' to Scotland are not up to the level of last year, and the total decrease for the year, to date, is 38,252 tons, or an aggregate of 135,100 tons. The increase in Scotch shipments, however, amounts to 51,887 tons, of which the bulk has gone to foreign destinations.

Messrs. James Watson & Co. said, on August 2: "The market has been rather irregular this week, but with more inquiry for makers' iron. On Monday it opened at 41/3, 14 days, gradually relapsing until 40/5, cash, was accepted on Wednesday forenoon; since then the tone has been firmer, and business has been done up to 40/8 per ton, closing sellers at 40/7 1/2; buyers at 40/7 per ton. The shipments last week were 3936 tons, as compared with 5610 tons for the corresponding week of 1878."

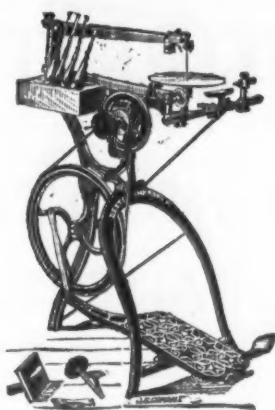
FROM SHEFFIELD.

there comes nothing but news of failures and rumors of ill omen. The town does not seem to recover in any of its staple industries; indeed, there are those who begin to incline to the opinion that one or two of the local trades have migrated. The trades unions have driven away the fire-iron and two or three other pursuits to Birmingham, and the pressure of modern competition is such that in other cases firms have voluntarily "cleared out" to Barrow-in-Furness and other places near the sea coast. I notice that there is at the present time a discussion in progress as to whether it is possible for the Bessemer steel and steel rail trades to be successfully carried on at or near Sheffield. One writer decides against the notion, and urges that the differences of freights, railway charges, &c., are so formidably opposed to all inland towns as manufacturing centers, that not only Sheffield but Birmingham must "remove" nearer the sea if they are to conduct any foreign or colonial transactions. As regards the Sheffield Bessemer business I differ somewhat from those who think that the parent locality is "not in it." At this moment the district is turning out quite as many rails as any other equal area, and at prices which cannot be underbid by concerns elsewhere. This is on a bottom, hard-pan market. As prices rise so will the prospects of Sheffield, and I, therefore, quite expect to see the old town hold its own. I heard of an order being booked the other day at £4. 4/ per ton, at the works, or about £4. 11/ f. o. b. Liverpool. There is a great deal of writing about rail making by people who know nothing whatever of the subject in its practical aspects, so that it is not all truth one peruses in the trade and other journals. I may, perhaps, mention here that Sweden is in the market for 16,000 tons of rails, India for 5000 tons, Russia for 20,000 tons, Brazil for 3000 tons, France for 30,000 tons and other countries for various smaller tonnages.

THE BIRMINGHAM AND DISTRICT.

iron trades are very quiet, and there is next to no call for general quantities of manufactured iron. Some of the current prices for hardware are quoted about as under: Common anvils, 17/ for export; bellows range in discount—house bellows, 40 to 50 %;

smith



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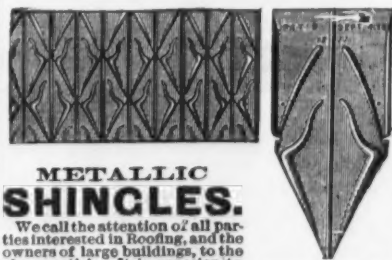
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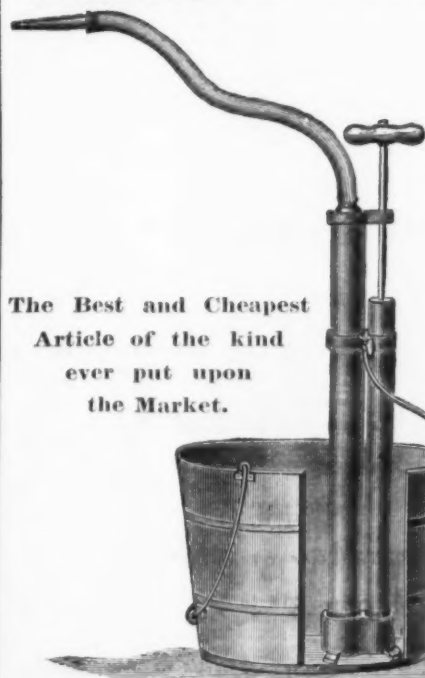


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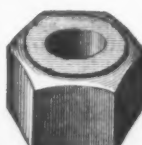
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John Russell Cutlery Co., 90 Chambers, N. Y.	36
Marg Bros., 40 Broadway, N. Y.	10
Meriden Cutlery Co., Meriden, Conn.	10
Rogers Cutlery Co., Hartford, Ct.	11
The Lamson & Goodnow Mfg. Co., 86 Chambers, N. Y.	10
Differential Pulley Blocks.	
Yale Lock Mfg. Co., 8 Chambers, N. Y.	3
Dinner Pail and Lanters.	
Haight Jos. Fortchester, N. Y.	36
Discount Tables.	
Jennings S. H., Deep River, Conn.	16
Leigh Edw. R., St. Louis Elevator, St. Louis, Mo.	16
Door and Gate Springs.	
Dunne F. H., 45 Fulton, N. Y.	24
Van Wagener & Williams, 83 Beekman, N. Y.	36
Door Bolts.	
Iron Hobs R., Fair Haven, Ct.	5
Drilling Machines, Makers of.	
Thorne, De Haven & Co., Greenfield, Mass.	31
Wiley & Russell Mfg. Co., Greenfield, Mass.	31
Drop Forgings.	
West Philadelphia Pa.	6
Rose Wm. & Bros., 55 Grand, N. Y.	36
Drop Hammers.	
The Stiles & Parker Press Co., Middletown, Ct.	34
Drop Presses.	
Beecher & Peck, New Haven, Conn.	35
Edge Tools, Makers of.	
Doehner M. & Co., Rochester, N. Y.	24
Gregg M. & Son, Rochester, N. Y.	24
Electric Machines.	
Weston Dynamo Electric Machine Co., Newark, N. J.	33
Elevators.	
Crane Bros. Mfg. Co., Chicago, Ill.	34
Stokes & Parrish, Philadelphia.	34
Elevator Buckets.	
Howland J. F., Brooklyn, N. Y.	24
Emery.	
Jennings S. H., Deep River, Conn.	16
Emery Wheels.	
Lehigh Valley Emery Wheel Co., Weissport, Pa.	36
Engines, Air.	
Conrad, Scherff & Co., 91 Washington, N. Y.	34
Engines, Gas.	
Schlesinger Schumm & Co., Philadelphia, Pa.	6
Engines, Locomotive.	
Baldwin Locomotive Works, Philadelphia, Pa.	6
Engines, Steam.	
Richmond Steam Engine Co., Pittsburg, Mass.	34
Harris Wm. A., Providence, R. I.	34
Lane & Bodley Co., Cincinnati, O.	34
Porter Mfg. Co., Philadelphia.	34
Porter Mfg. Co., Limited, Syracuse, N. Y.	34
Shapley & Wells, Birmingham, N. Y.	34
Wetherill Robt. & Co., Chester, Pa.	34
Equalizer.	
Junger M. E. & Co., Indianapolis, Ind.	10
Export Factor.	
Jennings S. H., Deep River, Conn.	16
Faucets, Brass, Makers of.	
McNab & Hart Mfg. Co., 40 John, N. Y.	39
Faucets, Wood.	
Pennell Block Works, Lockport, N. Y.	25

Faucets, Self-Measuring, Makers of.	
Enterprise Mfg. Co., of P. Phila. and N. Y.	23
Files, Importers of.	
Lane Bros., Millbrook, N. Y.	21
Files, Manufacturers of.	
Carr J. & Riley, 82 John, N. Y.	28
Moss F. W., 80 John, N. Y.	28
Files, Manufacturers of.	
Auburn File Works, 86 Chambers, N. Y.	8
Barnett O. & H., 41 and 43 Richmond, Phila.	8
Diston Henry & Sons, Phila.	8
Everhart James M., Scranton, Pa.	39
Johnson & Bro., 1 Commercial, Newark, N. J.	39
McCahey & Bro., 123 and 125 4th, Phila.	39
Nicholson File Co., Providence, R. I.	24
Paul Chas. R., Williamsburgh, N. Y.	24
Spencer J. H. & Son, Sheffield, England.	10
Fire Arms.	
Conway T. Co., 65 Chambers, N. Y.	10
Fire Brick, Makers of.	
Borgner & O'Brien, Philadelphia, Pa.	24
Brooklyn Clay Retort and Fire Brick Works, Van Dyke St., Brooklyn, N. Y.	24
Gardner Brothers, Pittsburgh, Pa.	24
Kreischer R. & Sons, 45 Gore St., N. Y.	24
Newton & Co., Albany, N. Y.	24
Ostrander Jacob, Troy, N. Y.	24
Perth Amboy Terra Cotta Co., Perth Amboy, N. J.	24
Valentine M. D. & Bro., Woodbridge, N. J.	24
Woolen B. B., Perth Amboy, N. J.	24
Flint and Emery Paper and Cloth.	
Reeder, Adamson & Co., 730 Market, Phila.	24
Forges, Portable, &c.	
Shepard Hardware Co., Buffalo, N. Y.	3
Fossiliferous Ores.	
Brown T. J., Rockwood, Tenn.	6
Foundry Facings.	
Richardson J. W. & Co., 514 Beech, Phila.	5
Whitehead Bros., 47 W. 15th, N. Y.	5
Friction Clutch.	
Smith James & Co., 137 Market, Phila.	32
Fry Pans.	
N. Y. Stamping Co., 111 Avenue A, N. Y.	27
Furnaces, Makers of.	
Richmond & Potts, 119 S. 4th, Phila., Pa.	5
Furniture Springs.	
Harvey & Mould, 159 25th, N. Y.	3
Haigh J. Lloyd, 31 John, N. Y.	3
Galvanized Iron.	
Lefferts Marshall, 90 Beekman, N. Y.	4
Garden Tools.	
Dunlap G. W. & Co., 41 Chambers, N. Y.	10
Enterprise Mfg. Co., Geneva, Ohio.	10
Gearing.	
Conly J., Lincoln Park, N. J.	30
Governors.	
Judson Junius & Son, Rochester, N. Y.	35
Grindstones.	
Wood H. & Co., 31 West, N. Y.	9
Wood Walter R., 283 and 285 Front, N. Y.	9
Worthington & Sons, North Amherst, Ohio.	28
Grinding Machines.	
Knapp & Co., 70 Wall, N. Y.	28
Knapp & Co., 70 Wall, N. Y.	28
Knapp & Co., 70 Wall, N. Y.	28
Handles, Makers of.	
Richardson J. W. & Co., Burlington, Conn.	8
Hundley & Hanks, 70 Reade, N. Y.	8
Hangers, Barn Door.	
Kiddler Slide Door Hanger Co., Romeo, Mich.	12
Hardware Commission Merchants.	
Fernald & Sise, 100 Chambers, N. Y.	8
Graham & Haines, 113 Chambers, N. Y.	8
Houston Commodore, 83 Beekman, N. Y.	8
Hundley & Hanks, 70 Reade, N. Y.	8
Samuel S. L., 9 Cedar, N. Y.	8
Tennant & Co., 83 Beekman, N. Y.	8
Walbridge O. R., 103 Chambers, N. Y.	8
Whitely John B. & Co., London and Paris.	10
Hardware Dealers.	
Lloyd, Supple & Walton, 65 Market, Phila.	21
Shepard Sidney & Co., Buffalo, N. Y.	27
Hardware Importers.	
Baker Herman & Co., Buffalo, N. Y.	29
McCoy & Co., 134 and 136 Duane, N. Y.	29
Hardware Manufacturers.	
Comly Jas., 479 Paul st., Philadelphia.	4
Coulter, Flagler & Co., Chambers, N. Y.	4
Cowles Hardware Co., Unionville, Conn.	4
Day, Farrington & Co., 205 3d Ave., N. Y.	4
Day, Farrington & Co., 205 3d Ave., N. Y.	4
Enterprise Mfg. Co., Phila.	4
Lloyd, Supple & Walton, 65 Market St., Phila.	21
Payson & Co., 112 W. Jackson, Chicago.	7
Phila. Novelty Mfg. Co., 81 Cherry, Phila.	7
Russell & Erwin Mfg. Co., New York.	9
Scott R. F. & Co., Newark, N. J.	9
Shannon J. B. & Sons, 102 1/2 Wall, N. Y.	9
Shepard Hardware Co., Buffalo, N. Y.	9
Stanley Works, New Britain, Conn.	9
Union Mfg. Co., 86 Chambers, N. Y.	9
Van Wagener & Williams, 83 Beekman, N. Y.	9
Hardware Specialties.	
American Machine Co., 193 N. 4th, Phila.	8
Shepard Sidney & Co., Buffalo, N. Y.	27
Spencer & Underhill, 43 Chambers, N. Y.	8
Harness Snaps.	
Covert Mfg. Co., West Troy, N. Y.	20
Hay Knives.	
Holt Hiram & Co., East Wilton, Me.	10
Hinges.	
Stanley Works, New Britain, Conn.	8
Hog Ringers.	
Chambers, Boring & Quinlan, Decatur, Ill.	7
Holding Engines, Makers of.	
Crane Bros. Mfg. Co., Chicago, Ill.	24
Davis A. J. & Co., Newark, N. J.	34
Holding Machines.	
Box Alfred & Co., 123 Green, Phila.	35
Clem & Morse, 413 Cherry, Philadelphia.	35
Harrington Edwin & Son, Philadelphia, Pa.	35
Hollow Chilled Rolls.	
Kotten & Co., Pittsburgh, Pa.	35
Hollow Ware.	
W. T. Wells, 75 Beekman, N. Y.	4
Hooks (Cotton & Bale).	
New York Handle & Mallet Works, 45 E. Houston, N. Y.	4
Horse Clippers.	
Boker Hermann & Co., 101 & 102 Duane, N. Y.	29
Horse Nails, Makers of.	
Ausable Horse Nail Co., 4 Warren, N. Y.	25
Bridgeport Iron Co., Bridgeport, Conn.	25
EP Nail Co., Cleveland, O.	25
National Horse Nail Co., Vergennes, Vt.	25
Northwestern Horse Nail Co., Chicago, Ill.	25
Saranac Horse Nail Co., Plattsburg, N. Y.	25
Horse Shoes, Makers of.	
Bundt Iron Works, Troy, N. Y.	4
Rhode Island Horse Shoe Co., Providence, R. I.	4
Schoenberger & Co., Pittsburgh, Pa.	4
Hose (Linen).	
Barnes Fire Hose Co., 13 Barclay, N. Y.	4
Housewarming Goods.	
Pierce Geo. N. & Co., Buffalo, N. Y.	7
Hydraulic, &c.	
McLean & Co., 35 Monroe, N. Y.	12
Mohawk & Hudson Mfg. Co., Watford, N. Y.	25
Hydraulic Cylinders.	
Judson Richard, 24 Columbia, N. Y.	31
Lyon E. & Co., 47 Grand, N. Y.	31
Ice Cream Freezers.	
White Mountain Freezer Co., Leona, N. H.	39
Ice Picks.	
Weeks A. A., 83 John, N. Y.	39
Insurance, Boiler.	
Hartford Steam Boiler Inspection & Insurance Co.	34
Iron Brokers.	
Borston Geo. A., 30 Wall, N. Y.	4
Edging Edward J., Philadelphia, Pa.	4
Harty A. G., Pittsburgh, Pa.	4
Iron, Charcoal, Iron or Coal, Meriden, Conn.	
Quincy John W., 98 William, N. Y.	4
Iron Commission Merchants.	
Low S. B., Chattanooga, Tenn.	6
Richardson J. O., 202 1/2 Dock, Philadelphia.	5
Water, J. & B., 35 Walnut, Phila.	5
Iron, Pig, Importers of.	
Williamson James & Co., 60 Wall, N. Y.	4
Iron Dealers.	
Abel Brothers, 100 South, N. Y.	4
Bonell, Botsford & Co., Youngstown, O.	4
Borden & Lovell, 70 and 72 West, N. Y.	4
Carmichael W. J., 130 and 132 Cedar, N. Y.	4
Conroy Daniel F., 8 Washington, N. Y.	4
Harris & Co., 100 Water, N. Y.	4
Hoffman J. W. & Co., 308 S. Fourth, Philadelphia.	4
Judson R. F., 457 and 459 Water, N. Y.	4
Kane C., Pittsburgh, Pa.	4
Lundberg Gustaf, 3 Kilby, Boston, Mass.	4
Ogden & Wallace, 87, 89 and 91 Elm, N. Y.	4
Pullman J. Wesley, Philadelphia, Pa.	4
Quincy John W., 98 William, N. Y.	4
Richardson J. O., 202 1/2 Dock, Philadelphia.	5
Water, J. & B., 35 Walnut, Phila.	5
Iron, Pig, Manufacturers of.	
Albany & Rensselaer Iron & Steel Co., Troy, N. Y.	28
Bradley, Reiss & Co., New Castle, Pa.	28
Britton Iron and Steel Co., Cleveland, Ohio.	28
Burden Iron Works, Troy, N. Y.	28
Conrad, Scherff & Co., 91 Washington, N. Y.	34
Hondette & Ellis, Boston, Mass.	3
Kirkpatrick, Beale & Co., Pittsburgh, Pa.	3
Leonard John, 40 and 42 West, N. Y.	3
North Chicago Rolling Mill Co., Chicago, Ill.	30
Phoenix Iron Co., 410 Walnut, Philadelphia.	3
Portsmouth Iron and Steel Co., Portsmouth, Ohio.	3
Roane Iron Co., Chattanooga, Tenn.	6
Rome Merchant Iron Mills, Rome, N. Y.	3
Rowland Wm. & Harvey, Philadelphia.	30
Schoenberger & Co., Pittsburgh, Pa.	4
Shelton & Co., 86 Chambers, N. Y.	2
The Pacific Rolling Mill Co., Paterson, N. J.	4
Uster Iron Works, 60 Broadway, N. Y.	4
U. S. Iron and Tin Plate Co., Pittsburgh, Pa.	4
W	

Jack Screws.	
Wynn, R. D., Windsor, Vt.	3
Jacks, Lifting.	
Diamond Mfg. Co., 325 Washington, Boston.	3
Latent, Manufacturers of.	
Latent, Manufacturers of.	3
DuBrul N. & Co., Cincinnati, O.	3
Howard & Morse, 45 Fulton, N. Y.	3
Lathe.	
Johnson, Jr. Israel H. & Co., Philadelphia.	31
Lemon Squeezers.	
Johnson, Jr. Israel H. & Co., Philadelphia.	31
Leveling Instruments.	
Bicknell & Comstock, 27 Warren, N. Y.	3
Locks, Manufacturers of.	
Diston Henry & Sons, Philadelphia.	21
Locks, Manufacturers of.	
Romanus Wilson, Broadway and Kosuth, Brookl.	10
Ivan, E. D.	10
Hillebrand & Wolf, 10 S. 8th, Philadelphia.	10
Smith & Edge Mfg. Co., Bridgeport, Conn.	10
Yale Lock Mfg. Co., 43 Chambers, N. Y.	10
Machinists.	
Bliss & Williams, 167 Plymouth, Brooklyn.	3
Box Alfred & Co., 123 Green, Phila.	35
Cochran James & Son, Troy, N. Y.	3
Landis Ezra F., Lancaster, Pa.	3
W. B. Flanders Machine Works, 102 Hamilton.	3
Forshall S. C. & Co., Manchester, N. H.	3
Garvin E. & Co., 139 Center, N. Y.	3
Honover & Sons, 415 Grand, N. Y.	3
Pittsburgh Mfg. Co., Pittsburgh, Pa.	3
Praet & Whitney Co., Hartford, Conn.	3
Wellers John, Williamsburgh, Phila.	3
The Stiles & Parker Press Co., Middletown, Ct.	3
Wetherill Robert & Co., Chester, Pa.	3
Machinist (Steam & Cold Power).	
Little Chas. E., 49 Fulton, N. Y.	3
Machine Screws, Makers of.	
Hartford Brass Screw Co., Hartford, Conn.	3
Fellows John, Williamsburgh, N. Y.	3
Waterbury Mfg. Co., Waterbury, Conn.	3
Machinist Tools.	
Blaisdell P. & Co., Worcester, Mass.	3
Ballard, R. F., 142 1/2 E. 12th, N. Y.	3
The Geo. Place Manufacturing Agency, 121 Chambers.	3
Harrington Edwin & Son, 151st St. and Pennsylvania Ave., Philadelphia, Pa.	3
King J. M. & Co., Waterford, N. Y.	3
Wells John, Williamsburgh, N. Y.	3
Malleable Iron Castings, Makers of.	
Hammer & Co., Branford, Conn.	3
Mallets.	
N. Y. Handle and Mallet Works, 45 E. Houston.	3
Mechanics' Tools.	
Jennings C. E. & Co., 65 Chambers, N. Y.	3
Measuring Tools.	
Eddy Geo. M. & Co., 343 Classon Ave., Brooklyn, N. Y.	3
Metallurgical Machinery.	
Murray John, Burlington, Iowa.	3
Silver & Deming Mfg. Co., Salem, O.	3
Metallic.	
Dickerson, Van Dusen & Co., 20 and 31 Cliff, N. Y.	3
Graves O. W. & Co., cor. Cliff and Beekman, N. Y.	3
Phelps Dodge & Co., Cliff, bet. John & Fulton, N. Y.	3
Phosphor Bronze, 203 Washington, N. Y.	3
86, Phila.	3
Curves A. & Son, 100 1/2 4th and Penn, Phila.	3
Quincy J. W., William, N. Y.	3
Read, D. W. R. & Co., 205 1/2 Walnut, Phila.	3
Starr John, Halifax, Nova Scotia.	3
Metallurgical Shingles.	
Phila. Novelty Mfg. Co., Brooklyn, N. Y.	3
Metallurgists.	
Booth Garrett & Blair, 410 Chant, Philadelphia.	3
Britton J. Hodge, 33 Walnut, Philadelphia.	3
Mica.	
Chester Mica & Porcelain Co., 87 Liberty, N. Y.	3
Mill Gearing.	
Moore & Hunt, Baltimore.	3
Miners.	
Philadelphia Novelty Mfg. Co., 821 Cherry, Phila.	3
Miners' Candles, Makers of.	
James Bro. & Sons, 10 and 12 Franklin, N. Y.	3
Mineral Wool.	
Albers Alexander D., 263 Broadway, N. Y.	3
Molding.	
Whitehead Bros., 47 W. 15th, N. Y.	3
Moose Traps.	
Quincy J. W., 165 Fulton, N. Y.	3
M. A. Hunt Mfg. Co., Cincinnati, O.	3
Oliver & Co., 100 Chambers, N. Y.	3
Ripley Mfg. Co., Unionville, Conn.	3
Nails.	
Oxley Iron Co., 81 Washington, N. Y.	3
Schwanen Jas. & Co., 630 N. Delaware Ave., Phila.	3
Schoenberger & Co., Pittsburgh, Pa.	3
Nail Machinery.	
Pittsburgh Mfg. Co., Pittsburgh, Pa.	3
Nail Works.	
Carter Edw., 57 Spring av., Troy, N. Y.	3
Hartman John, 379 N. Seventh, Philadelphia.	3
Nickel & Co., 100 Chambers, N. Y.	3
Condit, Hanson & Van Winkle, Newark, N. J.	3
Zucker & Levett, 50 and 61 W. 12th, N. Y.	3
Nippers.	
Delamater C. H. & Co., 10 Cortlandt, N. Y.	3
Interchangeable Tool Co., of New York.	3
Northey.	
Rowland Wm. & Harvey, Frankford, Philadelphia.	3
Note Broker.	
Galbraith Wm. J. & Co., Wall, N. Y.	3
Nuts, Bolts, etc., Makers of.	
Allentown Rolling Mill Co., Allentown, Pa.	3
Hasdell W. J., 100 Chambers, N. Y.	3
Standard Nut Co., 100 Chambers, N. Y.	3
Standard Nut Co., 100 Chambers, N. Y.	3
Oil Stones.	
Boyd & Chase, 107th and Harlem River, N. Y.	3
Oil Tanks.	
Chester Iron Co., 407 Walnut, Philadelphia.	3
Read, D. W. R. & Co., 205 1/2 Walnut, Philadelphia.	3
Paint.	
Lake Superior Paint Co., Cleveland, Ohio.	3
Paper.	
Paper, Philadelphia, Co., Norwich, Conn.	3
Parera, Apple.	
Reading Paper Co., Reading, Pa.	3
Patent Solicitors.	
Hawson & Son, Phila. and Washington, D. C.	3
Simmons & Co., 100 Chambers, N. Y.	3
Stetson Thomas D., 23 Murray, N. Y.	3
Tracy Geo. C. & Co., Cleveland, O.	3
Wenderson John & Co., 110 South 4th, Phila.	3
Pens, Steel.	
Easterbrook Steel Pen Co., New York.	3
Phosphor.	
Phosphor Bronze Smelting Co., 203 Washington Ave., Philadelphia.	3
Pliers & Co.	
Pliers & Co., 24 Broadway, N. Y.	3
Pins, Barbed Wire Fence.	
Schelle & Co., 100 Chambers, N. Y.	3
Pipes, Fittings, etc., Makers of.	
McNab & Harlin Mfg. Co., 60 John, N. Y.	3
Pipe, Water and Gas, Makers of.	
McNab & Archer, Burlington, N. J.	3
Wood B. D. & Co., Philadelphia, Phila.	3
Plate Irons, Manufacturers of.	
Buff Bros., Millbury, Mass.	3
Plumbers.	
Stanley Rule and Level Co., 23 Chambers, N. Y.	3
Plated Ware.	
Hall, Elliot & Co., 75 Chambers, N. Y.	3
Rogers Cutlery Co., Hartford, Ct.	3
Plumbers' Materials, Manufacturers of.	
Car Wm. & Co., 100 Chambers, N. Y.	3
Everhart Jas. M., Scranton, Pa.	3
Flows.	
Columbia Flow Works, Copake Iron Works, N. Y.	3
Pocket Knives.	
Boker Hermann & Co., 101 Duane, N. Y.	3
Presses, Presses, etc., Makers of.	
Mohawk & Hudson Mfg. Co., Watford, N. Y.	3
Presses, Power, Makers of.	
Bliss & Williams, 167 Plymouth, Brooklyn.	3
Merriman A. H., West Meriden, Conn.	3
Stiles & Parker Press Co., Middletown, Ct.	3
Pulleys.	
Oesterley W., Cincinnati, Ohio.	3
Pumps, Makers of.	
Providence Tool & Machine Co., Providence, R. I.	3
Pumps, Makers of.	
Douglas W. & B., Middletown, Conn.	3
Gunnison A. B., Erie, Penn.	3
Summers & Co., 100 Chambers, N. Y.	3
Rumsey L. M. & Co., St. Louis, Mo.	3
Union Mfg. Co., 36 Chambers, N. Y.	3
Kennedy D. L., 10 Cortlandt, N. Y.	3
Rails, Iron and Steel, Makers of.	
Cleveland Rolling Mill Co., Cleveland, Ohio.	3
Samuel Edw. & Co., 30 Walnut, Phila.	3
The Edgar Thomson Steel Co., 67 Broadway, N. Y.	3
Rivets.	
Gilman Wm. of Wm., Baltimore, Md.	3
Grundy Geo. C., 165 Greenwich, N. Y.	3
Townsend W. F. & Co., Pittsburgh, Pa.	3
Rock Drills.	
Gates & Scovill Iron Works, 47 Canal, Chicago.	3
Rolls (Chilled).	
Garrison A. & Co., Chester, Pa.	3
Rolls (Chilled).	
Dubois M. N., 821 Cherry, Philadelphia.	3
Rules, Manufacturers of.	
Stanley Rule and Level Co., 23 Chambers, N. Y.	3
Sand Irons.	
Chalfant Mfg. Co., 413 Philadelphia.	3
Sand Irons.	
Chalfant Mfg. Co., 413 Philadelphia.	3
Sand and Emery Paper, Makers of.	
Reeder, Adamson & Co., 730 Market, Philadelphia.	3
Saws, Wood, &c., Makers of.	
American Saw Co., Trenton, N. J.	3
Boydton E. M. & Beekman, N. Y.	3
Wheeler, Madden & Clemens Mfg. Co., Middle-	3
Scissors, Manufacturers of.	
Kimball & Kimball, New York, Philadelphia.	3
Seals, Manufacturers of.	
Chatham John & Son, 41 Cliff, N. Y.	3
Screws, Makers of.	
Wiley & Russell Mfg. Co., Greenfield, Mass.	3
Screw Drivers, Makers of.	
Diston Henry & Sons, Phila.	3

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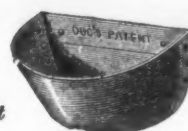
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In 12 in., 14 in., 16 in. and 17 in. Sizes.

Send for Circular.

Made of Best Charcoal Stamping Iron.
No Corners to Catch.
Light Running and Very Durable.
The only Scientifically Constructed Elevator Bucket
in the Market.The
MILL BUCKET.
In 3 1/2 in. to 10 in.
Sizes.

T. F. ROWLAND,

Sole Manufacturer,

CONTINENTAL WORKS, Brooklyn, E. D., N. Y.

NICHOLSON FILE CO., Manufacturers of FILES AND RASPS.

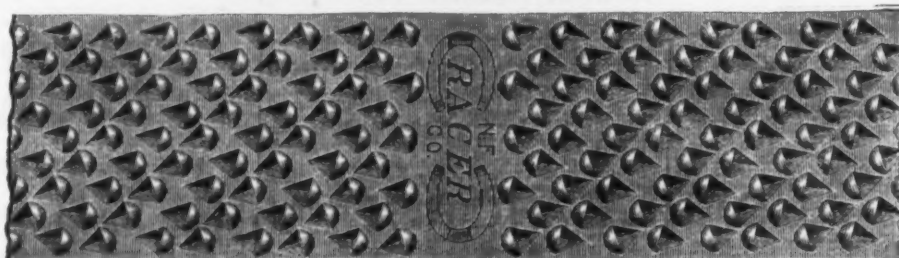
ALSO

Filers' Tools & Specialties.

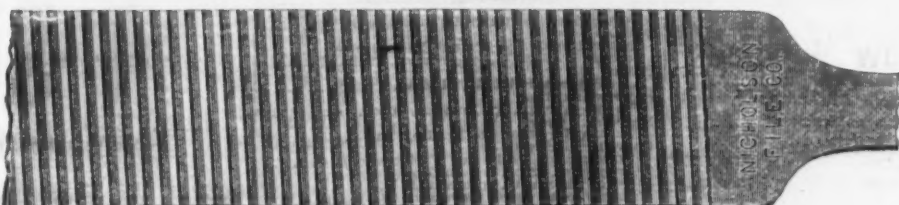
Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

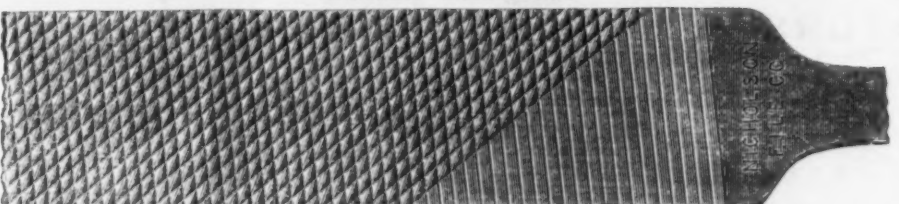
IMPROVED HORSE RASPS.



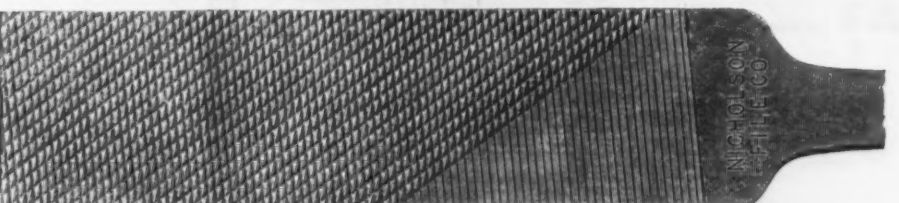
LEAD FLOAT.



BRASS COARSE.



BRASS BASTARD.



FINISHING 2d CUT.



G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoes and Mattocks,
Mill Picks,
Box Chisels and Scrapers,Ring Bush Hooks,
Ax Eye Bush Hooks,
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Watt's Ship Carpenters' Tools,
Carpenters' Drawing Knives,
Coopers' and Turpentiner Tools.

FOR SALE BY

MARTIN DOSCHER, Agent, 96 Chambers Street, N. Y.

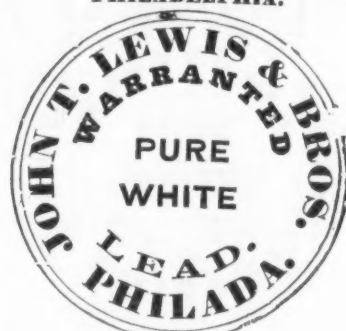
Established 1838.
Bevin Bros. Mfg.
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Easthampton, Ct.

Manufacturers of

SLEIGH BELLS

House, Tea, Hand,
Gong Bell &c.

Bell Metal Kettles.

John T. Lewis & Bros
No. 231 South Front St.,
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MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge,
Orange Mineral, Linseed Oil,
AND PAINTERS' COLORS
Brooklyn White Lead Co.

TRADE MARK.

White Lead, Red Lead & Litharge.

89 Maiden Lane, NEW YORK.

FISHER HOWE, TREASURER.

JOHN JEWETT & SONS

Manufacturers of the well-known brand of

WHITE LEAD.



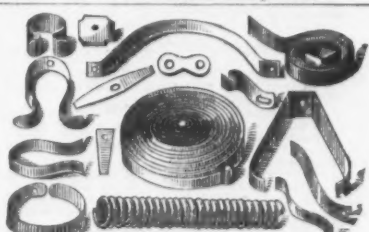
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ALSO MANUFACTURERS OF
LINSEED OIL.

182 Front Street, NEW YORK.



TRADE MARK.

The Atlantic White Lead
and Linseed Oil Co.,MANUFACTURERS OF
White Lead (Atlantic), Red Lead,
Litharge & Linseed Oil.ROBERT COLGATE & CO.,
287 Pearl Street, New YorkS. H. JENNINGS, Importer of and Sole
Agent in the United States for JENNINGS'S A. A.
ENGLISH WHITE LEAD, RED LEAD and LITH-
ARGE. Genuine, Best Quality, Low Prices.
Please write for information and prices.

DUNBAR BROS.,

Manufacturers of

Clock Springs and Small Springs

of every description, from best Cast Steel,
BRISTOL, CONN.

Torrey's Door Springs.

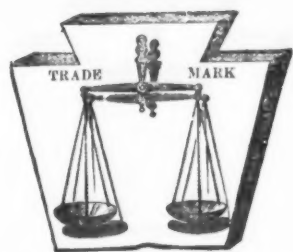
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Manufacturer,

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NEW YORK.

HENRY DISSTON & SONS

KEYSTONE SAW, TOOL,



STEEL and FILE WORKS,

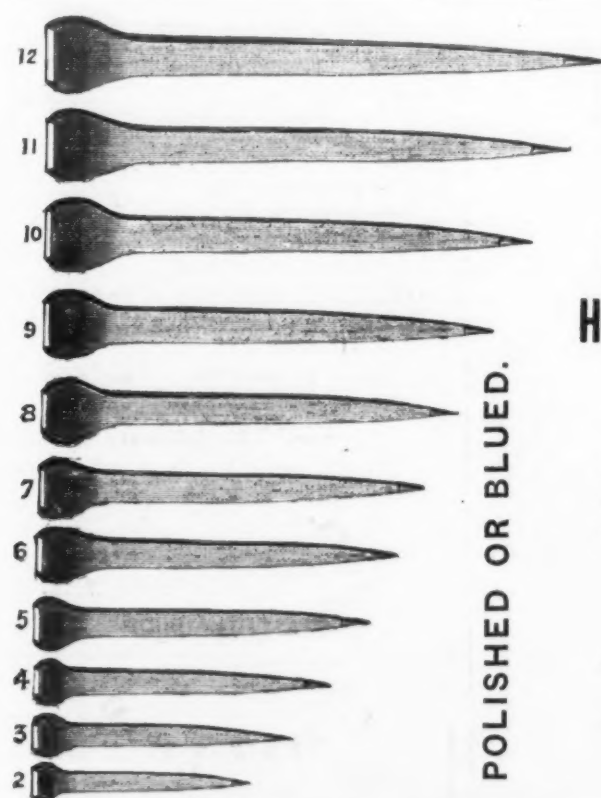
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MANUFACTURERS OF

SAWS OF ALL KINDS, FILES AND TOOLS, AND SPECIAL GOODS MADE FROM SHEET STEEL

All goods stamped Henry Disston & Sons, and bearing our trade mark, are fully warranted.

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POLISHED OR BLUED.

AUSABLE HORSE NAILS,

Twisted, Bent and Drawn
COLD.

Hot Forged and Cold Hammered Pointed,

Are the only Nails in market that are made in imitation of the Hand Process.
the uniformity of Machine Nails and the toughness of those hammered by hand

HOT FORGED AND COLD HAMMERED POINTED NAILS

Are the Standard Nails,

and are acknowledged to be the best in the market. They are used by the best
shoers in New York, Brooklyn, Philadelphia, Chicago, Saint Louis, Mil-
waukee, Baltimore, &c., and

GENERALLY THROUGHOUT THE UNITED STATES.

They also compete successfully in Foreign Countries with machine and hand-made Nails of their
own manufacture.

AUSABLE HORSE NAIL CO.,

4 Warren St., New York.



Steam and Frost prevented on Show Windows.



REVOLVING VENTILATORS

For everything (and every size), from a hat or cap to an exhibition building.

Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Offered for
six months. Each one has storm cap. Retail price, size six inch diameter, \$1.00 and upwards; apparatus
with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by
hospitals, schools, institutions, &c.; applied to any window or room.

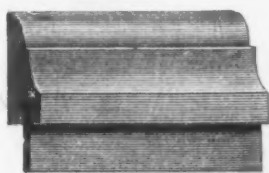
Prof. A. L. Loomis, M. D., University of City of New York, writes as follows:
"From my personal experience and that of my patients who have used your Ventilator during the past
six months, I am convinced that your method of removing dust, impurities and dampness from the atmo-
sphere is the best which has as yet been proposed. By its use in an apartment can be constantly changed
without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nur-
series and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply
steam filtered air. Prices and discounts to the trade sent on application.

The "Economy" Molding Weather Strip is perfect in
every respect. By enlarging edge of rubber or felt, and
making slot in molding to correspond (see engraving),
we save all after expense of molding. Once purchased
it will last a lifetime, because rubber, etc., has only to be
removed by taking old piece out of either end of mold-
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curing rubber all uncertainty of fastening or undoing of
glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions
to enable Car Manufacturers, Carpenters, Builders and
far off trade to make slots in Sashes, Doors, Mouldings,
&c., and thus make perfect Weather Strips.

No. 6.



BRACHER VENTILATOR CO., No. 3 Park Row, New York.



Cut No. 173. Wrought Iron and Steel.



Cut No. 27. Iron-Strapped
Self-Swivel Hook.



Cut No. 27. Iron-Strapped
Self-Swivel Hook.



Cut No. 27. Iron-Strapped
Self-Swivel Hook.



Cut No. 27. Iron-Strapped
Self-Swivel Hook.



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Cut No. 27. Iron-Strapped
Self

New York Wholesale Prices, August 20, 1879.

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Rolled Plates..... \$100
 Rolled Raised..... \$100
 Rivets..... \$100
 Plate Hinges..... \$100
 "Providence"..... \$100
 Screw Hook and Strap..... \$100
 Heavy Welded Hook..... \$100
 Screw Hook and Eye..... \$100
Horse—Solid Shank, C. S..... \$100
 Sockets..... \$100
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 Grub..... \$100
 Scovill Pattern..... \$100
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 Winsted & Lane, Planters..... \$100
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 Bird Cage, Sargent's list..... \$100
 Cotton, Patented (N. Y. Mallet & Handle Wks.)..... \$100
 Cotton (Hudson & Beckley Mfg. Co.)..... \$100
 Bench—Hotchkiss'..... \$100
 "Hotchkiss' No. 1, \$100; No. 2, \$100..... \$100
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 Clothes Line, Sargent's..... \$100
 "Reading list..... \$100
 Ceiling—Sargent's list..... \$100
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 Coat and Hat, Hart's list..... \$100
 "Reading..... \$100
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 Tassels (T. & S. Mfg. Co.)..... \$100
 Wrought Staples and Hooks and Staples..... \$100
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 Wire and Steel Hooks and Eyes..... \$100
 Whimbley—Patent..... \$100
 Hooks and Eyes..... \$100
Horse Hay Forks.
 "Reading list..... \$100
Horse Nails.
 Ausable..... \$100
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Oakum.
U. S. Navy..... \$7 10
U. S. Navy..... \$8 50
Nails.
Oilers, Zinc and Tin..... dis 50 to 5
Barnett's Copied..... dis 65
Olmedo's..... dis 65
Broughton's..... dis 65
Harris' Patent..... dis 65
Prior's Patent or Paragon..... dis 65
Zinc Brass..... dis 65

Ox Balls.

Pencils.
Faber's Carpenters..... High list, dis 40 to 5
Round Gill..... \$ gross 85 to net 25
Lumber..... \$ gross 85 to net 25

Packing Steam.
N. B. Clark Packing Co., new list Jan..... dis 50 to 5

Picture Nails.
Brass Head, Sargent's List..... dis 50 to 5
P & S Mfg..... dis 50 to 5
Porcelain Head, Sargent's List..... dis 50 to 5
Judd's List..... dis 40 to 5
Porcelain Head P & S Mfg..... \$ doz 750, net 25

Pinking Irons.
\$ doz 750, net 25

Plating Machines.
Magie..... \$ doz \$100, net 25
Antoni..... \$ doz \$15, net 25
Crown Plating Machines..... dis 25 to 5

Planer and Plane Irons.
Bench, First Quality..... dis 30 to 5 @ 35, 10 to 15
Second..... dis 40 to 5
Moulton..... dis 40 to 5
Bailey's Stanley R. & L. Co.'s new list Jan, '79, dis 40 to 5
The Stanley R. & L. Co.'s..... dis 40 to 5
Bailey's Planer..... dis 40 to 5
Defiance Adjustable, new list..... dis 25 to 10
Plane Irons, Butcher's..... \$c to 40
Sargent's Turners' Cutting Slippers..... dis 25 to 5
Auburn Tool Co.'s..... dis 25 to 5
Denance..... dis 25 to 10
Midwest Tool Swage..... dis 25 to 10
Ohio Tool Co.'s..... dis 25 to 10
Spear & Jackson's..... \$c to 40
Sargent's Tool Co..... dis 25 to 10

Pliers and Nippers.
Button's Patent..... dis 35 to 5
Hull's Patent Nippers No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 69

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15 X 26 to 24 X 30.....	12.75	11.50	10.50	9.75
20 X 26 to 24 X 30.....	13.50	12.25	11.25	10.50
20 X 30 to 20 X 44.....	14.75	13.75	11.75	10.75
20 X 30 to 24 X 30.....	15.25	14.00	12.00	11.00
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15 X 26 to 24 X 30.....	21.50	19.75	16.00	15.00
20 X 26 to 24 X 30.....	23.00	20.75	18.25	17.25
20 X 30 to 20 X 44.....	24.00	22.00	19.25	18.25
20 X 30 to 24 X 30.....	27.00	25.00	21.25	20.25
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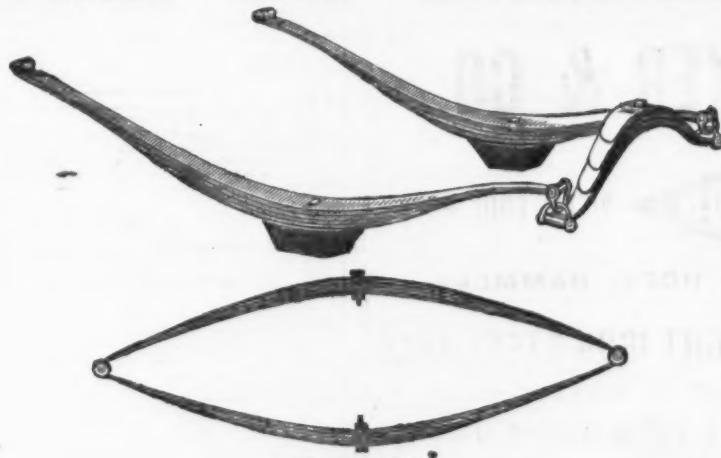
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of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach of the native language of eighty millions of *Germans*, forty-two millions of *French*, twenty-eight millions of *Italians*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.



BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of
Shank, Socket Firmer and Socket Framing Chisels,
PLANE IRONS.
Gouges of all lengths and circles beveled inside or outside. Nail Sets, Scratch and Belt Awhs
Chisel Handles of all kinds. Carving Tools. Also small Boxes of tools of best quality.



ARMSTRONG'S

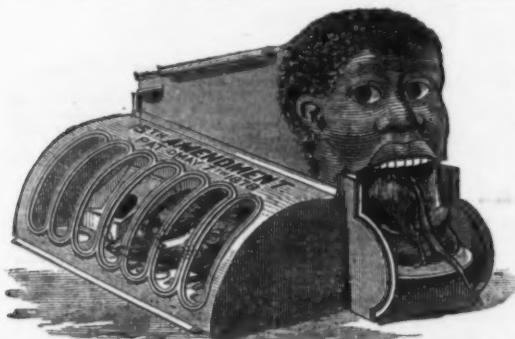
Adjustable Stock and Dies

For Pipe and Bolts,

Have the following advantages:

- 1st.—The Armstrong Improved Dies can be adjusted to the variations in the size of fittings.
 - 2d.—The Armstrong Dies, by reason of their peculiar cutting edge, can be worked with much less labor, and accomplish the desired results in less time, than with the solid Die.
 - 3d.—The Armstrong Dies have a double taper, that is, the taper at the entrance for the first few threads is greater in degree than the standard taper, which forms a lead to the Dies, causing them to start on the pipe without filing, even when there is a swell or burr, and requiring no pressure whatever to start the Dies on the pipe.
 - 4th.—The Armstrong Dies being made in two parts instead of one (as in the solid Die), can be more perfectly constructed; the cutting edges reached more directly; the work done with greater precision and uniformity, by which they accomplish a much better result.
 - 5th.—The Armstrong Dies can be sharpened without drawing the temper, and can be kept in good condition easier and with less expense than any other Dies ever offered to the public. A mechanic can sharpen these Dies, and is not obliged to send them to the manufacturer, as is the case with solid Dies when they become dull.
 - 6th.—The Armstrong Dies are interchangeable in the stock, and although adjustable, do not need adjusting to cut the standard size for which the dies are made. The adjusting is only done when the irregularity or variations in the fittings make it necessary. There are corresponding marks (s) on the Stock and on the Dies (F) and when these marks are brought into line the Dies will cut the standard size.
- For sale by leading dealers in Hardware and Steam and Gas Fitters' Tools. For further particulars address,

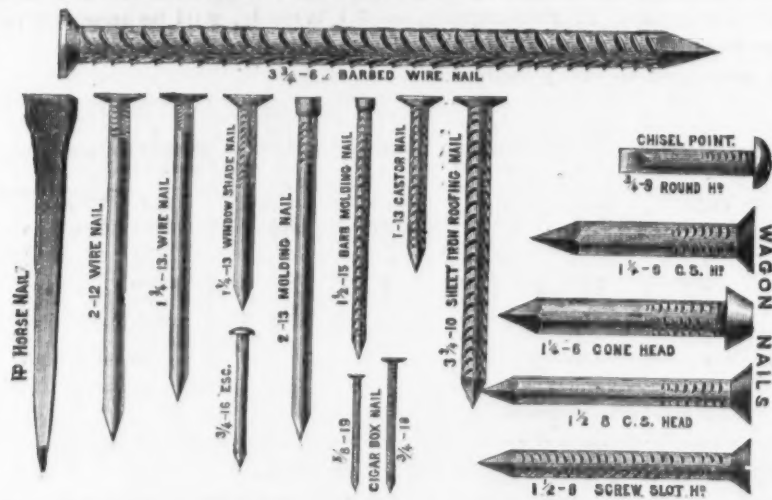
F. ARMSTRONG, Bridgeport, Conn.



15th Amendment MOUSE TRAP, SELF SETTING.

Is a perfect Mouse Catcher
and Comical Toy combined.
Most saleable article in the
market.

M. A. HUNT MFG. CO.,
Cincinnati, Ohio,
Sole Manufacturers.
Sold by all jobbers of Hardware
Wire Goods, &c.



HORSE SHOE & WIRE NAILS

Steel, Iron and Brass Nails and Barbed Nails

Of every kind.

Roofing and Moulding Nails, Escutcheon Pins, Chair and Caster Nails, Cigar
Box and Window Shade Nails, Wagon and Boat Nails.

Manufactured by

THE HP NAIL COMPANY,

Cleveland, Ohio.



NORTHWESTERN HORSE NAIL CO.

ESTABLISHED IN 1862

Hammered & Finished Horse Nails.

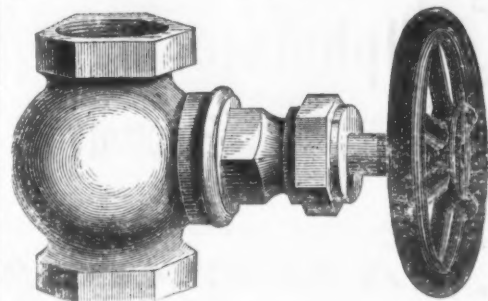
We offer our Finished Nail to the trade with the confidence that it has no equal
in the market. It is the genuine "Northwestern" Nail, Finished, and we give it
our unqualified guaranty.

Office and Factory, 56 to 68 Van Buren St., Chicago.

A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 115 Chambers Street, New York, carry a full
line of our goods, and will be pleased to serve you at Factory prices.

McNab & Harlin Mfg. Co., MANUFACTURERS OF BRASS COCKS AND VALVES,



For STEAM,
WATER
and GAS.

Iron Pipe and Fittings.
PLUMBERS' MATERIALS

New Illustrated Catalogue and Price
List sent by express to the Trade on ap-
plication.

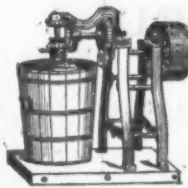
Factory, Paterson, N. J.

56 John Street, N. Y.



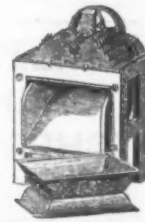
HAND FREEZER.

2 to 25 qts.
\$3.50 to \$25.00



HAND OR POWER
ICE CREAM FREEZER.

25 and 50 qts.
\$75.00 and \$175.00



HAND OR POWER
ICE CREAM FREEZER.

25 and 50 qts.
\$75.00 and \$175.00

SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.
Galvanized iron outside, tin inside. No secretions of oxide of zinc need be feared in the use of this Freezer.
Simple in construction, perfect in results. Send for descriptive circular and discounts of this celebrated
Freezer. Address
WHITE MOUNTAIN FREEZER CO., LACONA, N. H.

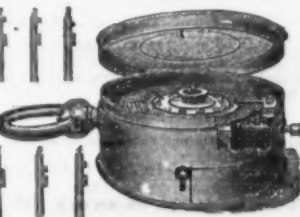
COULTER, FLAGLER & CO.,

87 Chambers and 69 Reade Sts., New York,

Hardware Manufacturers' Warehouse.



Office and Warehouse of Union Hardware Co.; Ruggs Mfg. Co.; Draw Knives, Chisels, &c.; Dense Bros. Bts.,
Corkscrews, &c.; Richardson Bros. Saws of all kinds; Brooks Edge Tool Co.'s Axes, Hatchets, &c.; M. Price,
Hatchets, &c.; J. & W. Rothery, Extra Hand Cut Files; L. D. Frost, Carriage Bolts, Refined and Norway Iron;
Cowles Hardware Co., Screwdrivers, Mining Knives, &c.; Elder, Wooster & Co., Anti-Friction Barn Door
Hangers, &c.; H. B. Hawley, Shears of all kinds; Walden & Co., Pocket Cutlery; American Screws; N. Y.
Anti-Friction Metal Co.'s Babbit Metal; Howard, Razor Strops; C. Forchner, Spring Balances; F. Lowen-
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Braces, all kinds; Devia Bros. Mfg. Co., Bells, all kinds; H. H. Parsons & Bro., Pliers, Nippers, &c.; C. L.
Griswold, Cast Steel Bits; Lancaster Lock Works, Jail Locks.



BUERK'S Watchman's Time DETECTOR.

IMPORTANT FOR ALL LARGE CORPORATIONS
AND MANUFACTURING CONCERNS.

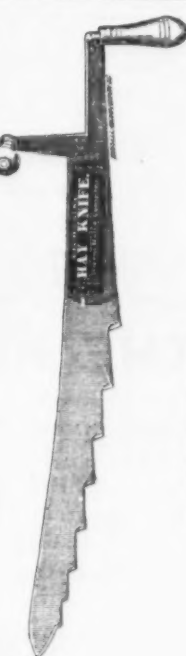
Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the
same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable
as the best lever watch. It requires no fixture or wires communicating from room to room, as is the
case with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each
station. The instrument will, in all cases, be warranted perfect and satisfactory.
N. B.—The suit against Imhaeuser & Co., of New York, was decided in my favor, June 10, 1874.
Another suit has been decided against them and a fine assessed Nov. 11, 1876, for selling contrary to the
order of the Court. Persons using clocks infringing on my Patent will be dealt with according to law.

J. E. BUERK, Proprietor,

P. O. Box 979.

No. 230 Washington Street, Boston.

In sending for circular or ordering the above, please mention this paper.



LIGHTNING HAY KNIVES, WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and
stack, cutting fine feed from bale, cutting corn stalks for feed, cutting
peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving
universal satisfaction. A few moments' trial will show its merits, and
parties once using it are unwilling to do without it. Its sales are fast in-
creasing for export as well as home trade, and it seems destined to take the
place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suit-
able for shipping by land or water to any part of the world.

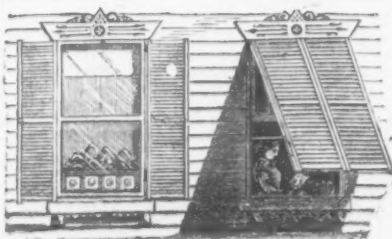
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HIRAM HOLT & CO.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

Dearborn's Pat. Adjustable Blind Awning Fixtures.



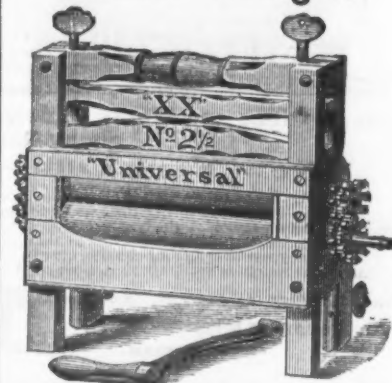
Either old or new Blind is thus fitted can
be opened in the usual way or used as an
awning at pleasure.

For particulars address the sole manufac-
turers,

BOSTON BLOWER CO.,

Boston, Mass.

THE "OLD RELIABLE" UNIVERSAL Clothes Wringer.



Improved with Rowell's Double Cog-Wheels on
both ends of each roll.

Over 500,000 sold!

And now in use, giving "Universal" satisfaction

EVERY WRINGER WARRANTED.

Be sure and inquire for the "Universal."

Sold by the Principal Jobbers in Hard-
ware and House-Furnishing Goods
everywhere.

Special rates given for export.

Metropolitan Washing Machine Co.

32 Cortlandt St., New York.

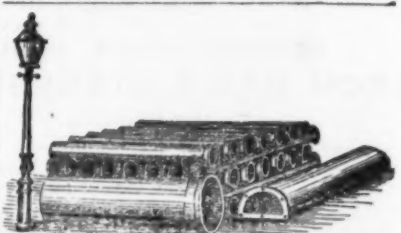
WM. S. CARR & CO.



Sole Manufac-
turers of
**CARR'S
PATENT
Water
Closets,**

PUMPS, CABINET WOOD WORK, &c.

106, 108 & 110 Centre Street,
Factory, Mot Haven, NEW YORK.



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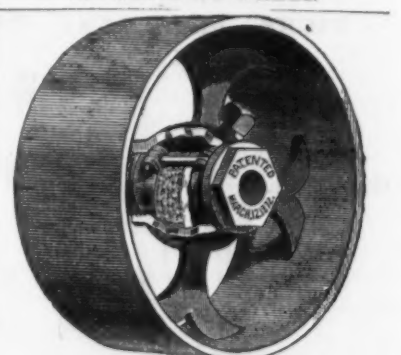
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Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.



SELF-LUBRICATING

Loose Pulleys.

W. OESTERLINE,

29 Allison St., CINCINNATI, OHIO.

Send for Circulars and Price List.

THE "ECLIPSE"

Hand Fan Blowers.

Every machine guaranteed or no sale.
Is now improved by lever attach-
ment. Works precisely like bellows
lever, or, if preferred, crank can be used.
The trade are invited to write for terms,
descriptive circulars, &c.

Also,

EXHAUST FANS

for ventilating mines.

Address,

EZRA F. LANDIS,

Sole Manufacturer,

LANCASTER, PA.

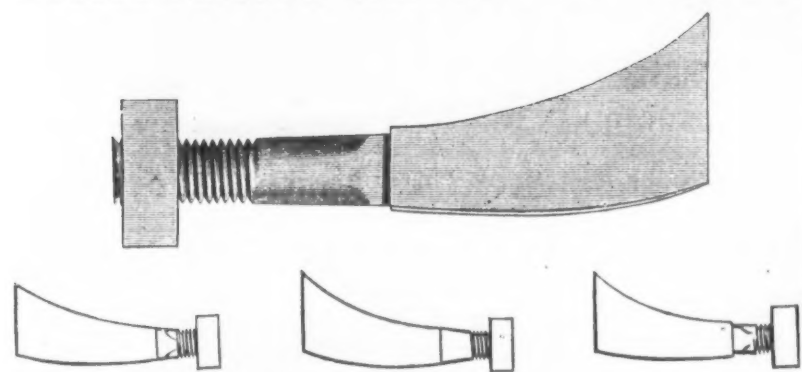
VERMONT SNATH CO.,

Manufacturers of

Pat. Swing Socket Snaths

and also a large variety of other styles of Snaths,
Springfield, Vermont.

THRESHING MACHINE TEETH



We manufacture all styles, such as
 MASSILLON, BUFFALO PITTS,
 ALTMAN & TAYLOR VIBRATOR,
 CHICAGO PITTS,
 SPRINGFIELD PITTS,
 WOOSTER, VERMONT and
 NEW YORK PATTERNS,
 and others.

Send for Prices.



Providence Tool Co.,
 PROVIDENCE, R. I.

Or to J. H. Work, 13 Pearl St., Boston, Mass.; S. H. & E. Y. Moore, 68 Lake St., Chicago, Ill.; Henry B. Newhall, 11 Warren St., N. Y.

IMPROVED PIPE-FITTERS' VISE.



STRONG,
 LIGHT,
 EFFICIENT,
 CHEAP.

To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work bench, attached to angle plate or can (unlike others) be held between the jaws of any Machinist's or Blacksmith's Vise; the movable jaw being OPEN ON SIDE permits work to be gripped at any desired point without slipping it in from end, and allows of FITTINGS BEING HELD securely; the Box is made of Malleable Iron, the Screw of Wrought Iron, and the remainder of Solid Steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well-Drivers, and all who have use for a tool that is strong, light, efficient and cheap which can be readily carried about with kit of tools.

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 243 and 245 South Third Street, Philadelphia.

Wheeler, Madden & Clemson
MFG. CO.,
 MIDDLETOWN, NEW YORK.

Manufacturers of
WARRANTED CAST STEEL

SAWS

Of every description, including
 Circular, Shingle, Cross-Cut, Mill, Hand,
WOOD SAWS, Etc., Etc.

AMERICAN SAW CO.,

Manufacturers of

Movable Toothed Circular Saws,
PERFORATED CROSS-CUT SAWS
 And SOLID SAWS of all kinds, Trenton, N. J.

HUNDLEY & HANKS,
 PROPRIETORS OF

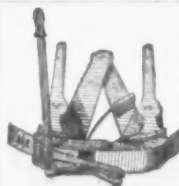
NORTH CAROLINA HANDLE CO.



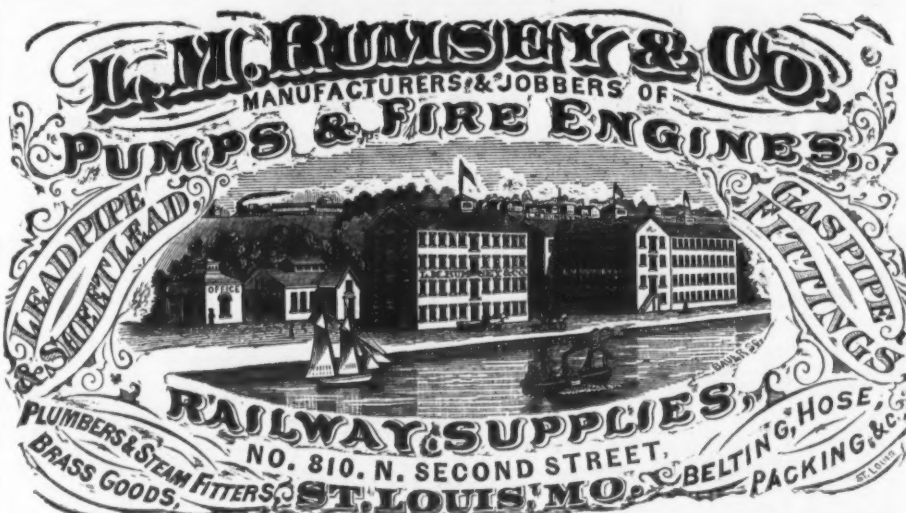
MANUFACTURERS OF
Handles and Spokes,
 77 Beade Street and 97 Chambers Street, NEW YORK.
 HARDWARE COMMISSION MERCHANTS.

ROCK BREAKERS.

Blake's Patent Expired—End of Monopoly.
 The undersigned, sole owners of the old Leviathan, Gates' patent, and the Brown's patent Rock breakers, will guarantee our crushers to break two tons to one of Blake's (or any other). Send for circulars. Also Stamp Mills and all kinds of Mining Machinery made on short notice.
 Office, 52 Canal Street, Chicago, Ill.
GATES & SCOVILL IRON WORKS.



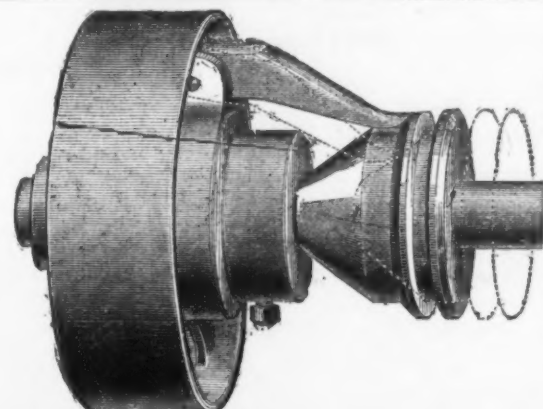
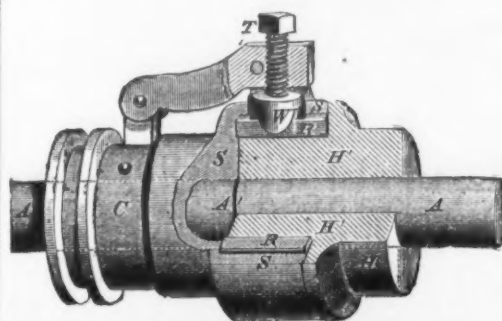
LITTLE GIANT
 Wagon Tire Upsetter.
 Strong, durable, cheap.
 Best ever invented. Saves cutting and welding. Upsets tires one inch at a heat. Adapted to tires of any size or diameter. Price \$12. Send for circular.
 Little Giant Mfg. Co.,
 Millport, N. Y.



Manufacturers of GALVANIZED PUMP CHAIN FOR CHAIN PUMPS.



PATENT
 Expanding, Self-Draining
 RUBBER BUCKET.
 Manufactured only by
L. M. RUMSEY & CO.



HUB FRICTION CLUTCH.
 James Smith & Co., Mfg. Agents

PATENT HUB FRICTION CLUTCH.

Manufactured by the **HUB FRICTION CLUTCH CO., Limited, Philadelphia.**

We claim for this device the following advantages for a perfect clutch, it having been adopted by several of the leading manufacturers of machinery and machinists' tools: It works easily but effectively. It works instantly and without noise. It is very durable, and is extremely simple and cheap, and has proven itself to be the best clutch in the market. Special arrangements can be made with leading manufacturers for the adoption of this clutch for their own tools. This clutch can and will be sold for less money than any other clutch in the market.

For sale by Geo. V. Casson, Philadelphia; Morton, Reed & Co., Baltimore.
JAMES SMITH & CO., Mfg. Agents, 137 Market Street, Philadelphia.
 H. S. MANNING & CO., NEW YORK AGENTS, 111 Liberty Street

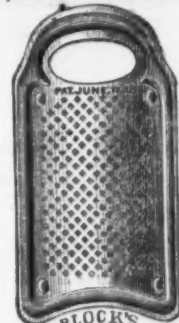
HOLROYD & CO.,

Waterford, N. Y.



DAVID BLOCK,

Manufacturer of
 Plain, Stamped & Japanned
TIN WARE.
 Block's Tin Spout Strainer & Patent O. K. Grater.



Office and Salesroom,
69 BAYARD STREET,
 Factory, 139 & 141 Centre St., NEW YORK.

PAT. "SCREW WINDOW BALANCES."

Retail Price, \$1 per window (four balances).

Liberal Discount to the Trade

Retain Medium and Light Window Sash at any point of opening, with large surplus holding power in reserve, available by drawing the adjusting screws when required. They are to old windows without weights.

What the door knob has been to old doors furnished with latches.

A valuable article, as easily applied to old and new windows as the common sash pulley. They do everything claimed for them, rendering the use of boxed frames, cords, pulleys, and the perplexing task of hanging sash unnecessary.

Sashes are locked with a meeting rail lock, as with weights.

These goods give satisfaction.

For sale by the Hardware trade. Send orders, etc., to

ROBERT B. HUGUNIN,
 Manufacturer of Screw Balances,
 Wethersfield, Ct.

See The Iron Age of June 5 and July 3, 1879, and wholesale New York prices, this paper, for prices to the trade.

SPECIAL NOTICE.

The undersigned, in view of the International Exhibitions to take place in Australia, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the ENGLISH, FRENCH, GERMAN, PORTUGUESE, and SPANISH, and that he bestows special attention upon a strictly correct rendering of Technical Expressions in matters relating to Machinery, Metallurgy, . . .draulics, &c. The very best reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages.

C. H. BIRCHBROOK, P.
 Metal Reporter of The Iron Age,
 83 Beade St., New York.



THE "ABBE" PATENT Bolt Forging Machine.

Any Imaginable Shape of Head can be Produced.

All its working surfaces above the Water and Cinders. There are neither Gears, Cams nor Springs—every motion being positive. For particulars address

S. C. FORSAITH & CO.,
 Manchester, N. H.

Also Manufacturers of
 The "Pamer" Power Spring Hammer



NEW sizes Patent Malleable Iron Ollers, Nos. 2 and 3.
NEW pattern Heavy Screw Clamps; strongest in the market.
 Send for Price List.
Malleable Iron Castings
 Of superior quality, and Hardware Specialties in Malleable Iron made to order.
HAMMER & CO., Branford, Conn.

"THE BOSS" JACK-SCREW.

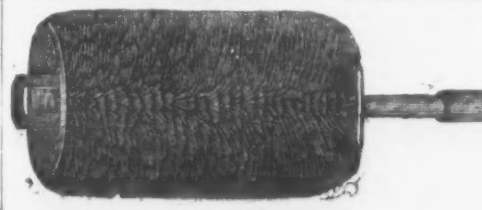
R. D. WYNN,
 Windsor, Vt., U. S. A.,

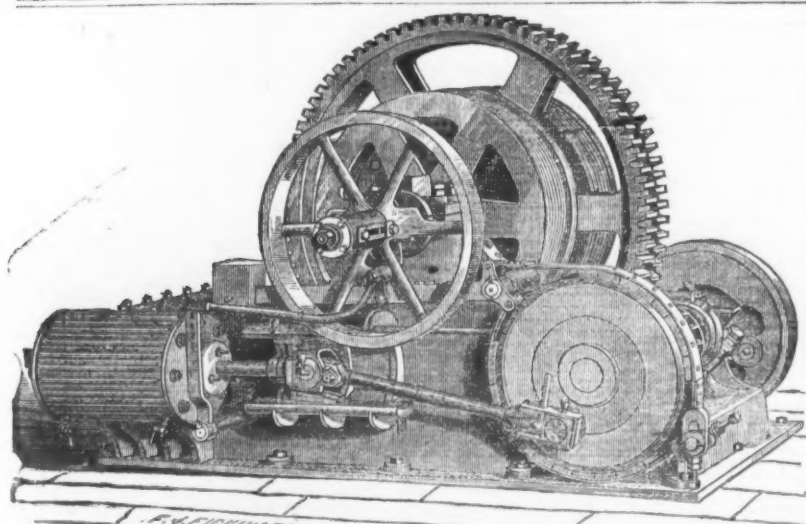
Sole manufacturer of the above Screw. Indorsed by builders, railroad and mining men as the best screw jack in the market. Also manufactures Press Screws, Lard and Wine Presses, Tackle Blocks, &c. Circulars and prices, address as above. (Please say The Iron Age.)

Agents, Fugley & Chapman, 8 Liberty St., New York. Sam'l May & Co., 16, 18 & 20 Oliver St., Boston.

PATENT STEEL TUBE AND FLUE BRUSH.

Manufactured and for sale in the
L. B. Flanders Machine Works,
 1025 Hamilton St., . . . PHILADELPHIA.
 Descriptive circular on application.



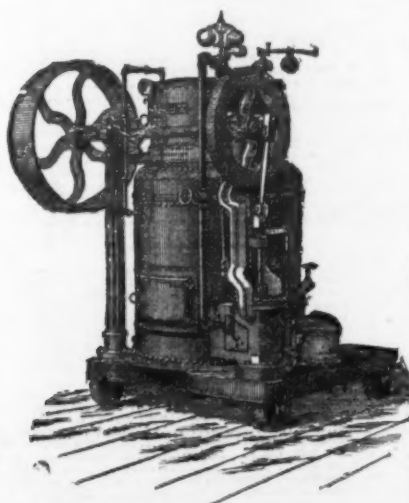


IRON FURNACE HOIST

For Handling Two Platforms.

Passenger and Freight Elevators, Steam, Hydraulic and Belt Power. Portable and all kinds of Hoisting Machinery a specialty.

STOKES & PARRISH, 3001 Chestnut St., Philadelphia.



SHAPLEY ENGINE.

Patented Feb. 10, 1874.
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

SHAPLEY & WELLS,

Binghamton Iron Works,
Binghamton, N. Y.

Stationary Engines and Boilers.

Also Machinery for Mills of all kinds and Tanneries. Also their celebrated Bark Mills, acknowledged to be the best. Send for reduced price list circular.

JOHN ADT,

20, 22, 24 and 26 Artisan Street, New Haven, Conn., U. S. A.

Automatic machines to straighten and cut wire of all sizes to any length; to cut and mill wire for butt pins, bolt shanks and similar articles; to make all kinds of staples, with either square, beam, chisel or shear points; to roll points on picture nails and similar articles without heat; to cut and form wire into various shapes and sizes, such as rings, buckles, fence bars and similar articles; to make spiral springs; and for other special purposes to order.

Machines to straighten and cut wire by hand; to rivet together articles of hardware; to drill butts and other hardware; to mill butts; to drill or countersink several holes at once, close together or far apart, on a regular or irregular line; to drill, tap, mill and thread small articles of hardware, such as thumb screws, thumb nuts, &c.; to spin plain or ornamental caps on picture nails, tassel hooks, &c.; for grinding, buffing and polishing; to drive screws into locks, knobs, &c.; foot and hand presses and special power presses to order.

BOLT & PIPE THREADING HEADS

For Attachment to Lathes, &c.



Send for Catalogue and Price List.

STOCKWELL SCREW & MACHINE CO.,
Cleveland, Ohio.

Great Reduction in Price of

CHUCKS

both to the trade and consumers. Address,

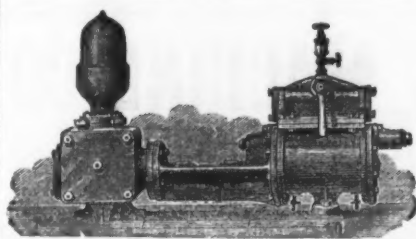
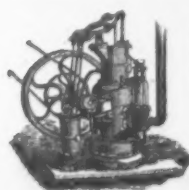
A. F. CUSHMAN, Hartford, Conn.

AIR ENGINES. NO WATER. NO ENGINEER.

No extra insurance! Absolutely safe! Simple! Reliable! Durable! Most convenient and economical power known.

SHERILL ROPER AIR ENGINE CO.,

Manufacturers of Air Engines, Elevators and Hoisting Machinery
91 & 93 Washington Street, New York.



A. S. CAMERON'S PATENT

"SPECIAL" STEAM PUMP

Is the Standard of Excellence at Home and Abroad.

For reduced price lists address A. S. CAMERON, East 23d Street, New York.

Babcock & Wilcox Water-Tube Steam-Boiler

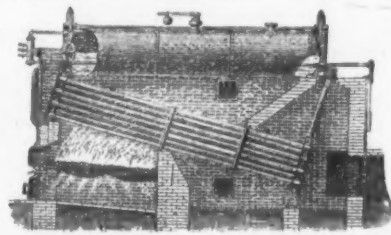
OVER 35,000 HORSE-POWER NOW IN USE. ADAPTED FOR ALL PURPOSES.

SAFETY FROM

In Sections Easy of Transportation.
No Bolted, Screwed or Packed Joints.
All Joints Made by Expanding Wrought Iron Tubes into Bored Holes.
Can be Erected or Repaired by Ordinary Mechanic.

EXPLOSIONS.

Easily Cleaned from Soot or Sediment.
Adapted to all kinds of Fuel.
Steady Water Line and Dry Steam.
No Leaks from Unequal Expansion.
Rapid Steaming.
Highest Attainable Economy.



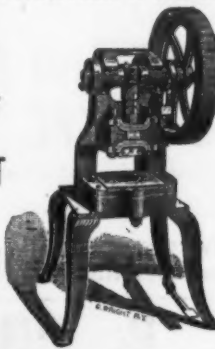
CENTENNIAL EXPOSITION MEDAL AWARDED THIS BOILER FOR HIGHEST ECONOMY AND EFFICIENCY ON TEST.

Illustrated Circulars and other desired information promptly furnished.

BABCOCK & WILCOX, Engineers, 30 Cortlandt St., N. Y.

Bliss & Williams, MANUFACTURERS OF ALL KINDS OF PRESSES and DIES.

Also Manufacturers of SPECIAL MACHINERY FOR WORKING SHEET METALS, &c. FRUIT & other CAN TOOLS. MEDAL AWARDED



167 to 173 Plymouth St.,
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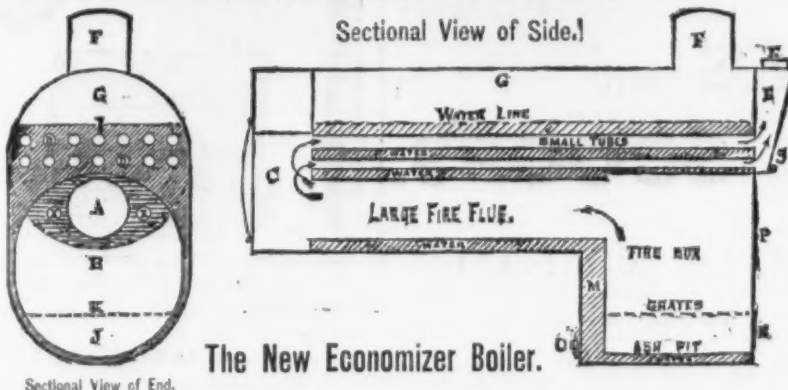
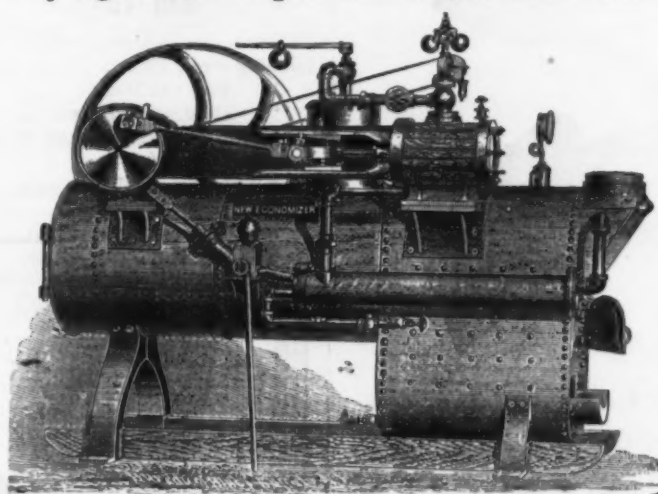
Catalogues in English, French and German sent on application, in which prices are computed in dollars, pounds, francs and reichsmarks.



PARIS EXPOSITION, 1878.

THE NEW ECONOMIZER,

The Only Agricultural Engine with Return Flue Boiler in Use.



The New Economizer Boiler.

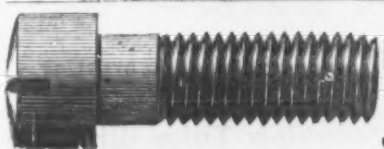
This Boiler contains all the good points of an ordinary locomotive boiler; the fire-box is entirely surrounded by water, and the flames pass through the large fire-flue almost in a body. There is no obstruction whatever to the draft. The returning of the flames through the small tubes compels the deposit of the great body of sparks in the chamber at rear (C). We claim it is the safest boiler in the market, there being almost entire immunity from sparks, on account of the return flue idea. It is the best steaming boiler made, and we will invite competition with any first-class maker. It will make more steam with the same fuel than any horizontal boiler built. Send for Price Lists. We invite correspondence, and will furnish full circulars, photographs, &c., on application.

PORTER MANUFACTURING COMPANY, Limited,
Syracuse, N. Y.

G. G. YOUNG, General Agent, 42 Courtlandt Street, New York.

LANE & BODLEY CO.,
MANUFACTURERS OF
STEAM ENGINES, SAW MILLS AND
MINING MACHINERY.

LANE & BODLEY COMPANY, Cincinnati, Ohio.

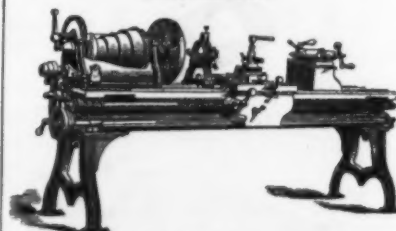


TURNED MACHINE SCREWS,
One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.
JOHN FELLOWS,

(Successor to LYON & FELLOWS.) Factory and Office, 14 Dunham Place, Williamsburgh, N. Y.

P. BLAISDELL & CO.,

Manufacturers of



MACHINISTS' TOOLS,

Blaisdell's Patent Upright Drills,

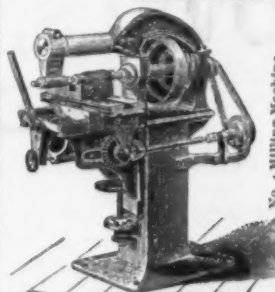
With Quick Return Motion.

Engine Lathes, Planers, Boring Mills,
Gear Cutters and Hand Lathes.

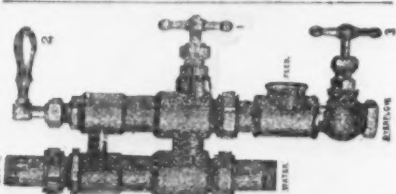
WORCESTER, MASS., U. S. A.

E. E. GARVIN & CO.

Manufacturers of



139-143 CENTRE STREET,
Cornell's Building,
NEW YORK.
Send for Illustrated Catalogue.



THE HANCOCK INSPIRATOR,

New Combined Pump and Injector.

Eclipses all other appliances hitherto introduced for feeding Steam Boilers. A Portable Boiler is not perfect without one. It lifts its water 25 feet with a low steam pressure, and puts it directly into the Boiler. No adjustment necessary for varying steam pressures. G. W. STORER, General Agent, 132 N. 3d St., Phila.

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Hartford, Conn., U. S. A.,

Make specialties of

DROP HAMMERS

Punching Presses, Hand Drilling Machines, Ratchet Drills, Combination Lathe Chucks, Cutters for Teeth of Gear Wheels, Screw Plates, Hand Machine, Nut and Pipe Taps, Bolt Cutters, &c., &c.

Manufactured by

STEAM PUMPS
Crane Bros. Mfg. Co.,
CHICAGO.

Machinery, &c.

THE JUDSON GOVERNOR.

It is a common method to advertise Governors without cost, unless satisfactory to the customer, and then charge high prices for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List,
OCTOBER 15, 1878.
For dimensions of Governor, see Illustrated Price List.

Size, Inch.	Plain.	Bright Finish.	Extra for Stop Valve.
1 1/2	16.00	17.00	1.00
2	18.00	19.00	1.00
2 1/2	20.00	21.00	1.00
3	23.00	24.00	1.00
3 1/2	27.00	28.00	1.00
4	31.00	32.00	1.00
4 1/2	35.00	36.00	1.00
5	40.00	41.00	1.00
5 1/2	45.00	46.00	1.00
6	50.00	51.00	1.00
6 1/2	55.00	56.00	1.00
7	60.00	61.00	1.00
7 1/2	65.00	66.00	1.00
8	70.00	71.00	1.00
8 1/2	75.00	76.00	1.00
9	80.00	81.00	1.00
9 1/2	85.00	86.00	1.00
10	90.00	91.00	1.00
10 1/2	95.00	96.00	1.00
11	100.00	101.00	1.00
11 1/2	105.00	106.00	1.00
12	110.00	111.00	1.00
12 1/2	115.00	116.00	1.00
13	120.00	121.00	1.00
13 1/2	125.00	126.00	1.00
14	130.00	131.00	1.00
14 1/2	135.00	136.00	1.00
15	140.00	141.00	1.00
15 1/2	145.00	146.00	1.00
16	150.00	151.00	1.00
16 1/2	155.00	156.00	1.00
17	160.00	161.00	1.00
17 1/2	165.00	166.00	1.00
18	170.00	171.00	1.00
18 1/2	175.00	176.00	1.00
19	180.00	181.00	1.00
19 1/2	185.00	186.00	1.00
20	190.00	191.00	1.00
20 1/2	195.00	196.00	1.00
21	200.00	201.00	1.00
21 1/2	205.00	206.00	1.00
22	210.00	211.00	1.00
22 1/2	215.00	216.00	1.00
23	220.00	221.00	1.00
23 1/2	225.00	226.00	1.00
24	230.00	231.00	1.00
24 1/2	235.00	236.00	1.00
25	240.00	241.00	1.00
25 1/2	245.00	246.00	1.00
26	250.00	251.00	1.00
26 1/2	255.00	256.00	1.00
27	260.00	261.00	1.00
27 1/2	265.00	266.00	1.00
28	270.00	271.00	1.00
28 1/2	275.00	276.00	1.00
29	280.00	281.00	1.00
29 1/2	285.00	286.00	1.00
30	290.00	291.00	1.00
30 1/2	295.00	296.00	1.00
31	300.00	301.00	1.00
31 1/2	305.00	306.00	1.00
32	310.00	311.00	1.00
32 1/2	315.00	316.00	1.00
33	320.00	321.00	1.00
33 1/2	325.00	326.00	1.00
34	330.00	331.00	1.00
34 1/2	335.00	336.00	1.00
35	340.00	341.00	1.00
35 1/2	345.00	346.00	1.00
36	350.00	351.00	1.00
36 1/2	355.00	356.00	1.00
37	360.00	361.00	1.00
37 1/2	365.00	366.00	1.00
38	370.00	371.00	1.00
38 1/2	375.00	376.00	1.00
39	380.00	381.00	1.00
39 1/2	385.00	386.00	1.00
40	390.00	391.00	1.00
40 1/2	395.00	396.00	1.00
41	400.00	401.00	1.00
41 1/2	405.00	406.00	1.00
42	410.00	411.00	1.00
42 1/2	415.00	416.00	1.00
43	420.00	421.00	1.00
43 1/2	425.00	426.00	1.00
44	430.00	431.00	1.00
44 1/2	435.00	436.00	1.00
45	440.00	441.00	1.00
45 1/2	445.00	446.00	1.00
46	450.00	451.00	1.00
46 1/2	455.00	456.00	1.00
47	460.00	461.00	1.00
47 1/2	465.00	466.00	1.00
48	470.00	471.00	1.00
48 1/2	475.00	476.00	1.00
49	480.00	481.00	1.00
49 1/2	485.00	486.00	1.00
50	490.00	491.00	1.00
50 1/2	495.00	496.00	1.00
51	500.00	501.00	1.00
51 1/2	505.00	506.00	1.00
52	510.00	511.00	1.00
52 1/2	515.00	516.00	1.00
53	520.00	521.00	1.00
53 1/2	525.00	526.00	1.00
54	530.00	531.00	1.00
54 1/2	535.00	536.00	1.00
55	540.00	541.00	1.00
55 1/2	545.00	546.00	1.00
56	550.00	551.00	1.00
56 1/2	555.00	556.00	1.00
57	560.00	561.00	1.00
57 1/2	565.00	566.00	1.00
58	570.00	571.00	1.00
58 1/2	575.00	576.00	1.00
59	580.00	581.00	1.00
59 1/2	585.00	586.00	1.00
60	590.00	591.00	1.00
60 1/2	595.00	596.00	1.00
61	600.00	601.00	1.00
61 1/2	605.00	606.00	1.00
62	610.00	611.00	1.00
62 1/2	615.00	616.00	1.00
63	620.00	621.00	1.00
63 1/2	625.00	626.00	1.00
64	630.00	631.00	1.00
64 1/2	635.00	636.00	1.00
65	640.00	641.00	1.00
65 1/2	645.00	646.00	1.00
66	650.00	651.00	1.00
66 1/2	655.00	656.00	1.00
67	660.00	661.00	1.00
67 1/2	665.00	666.00	1.00
68	670.00	671.00	1.00
68 1/2	675.00	676.00	1.00
69	680.00	681.00	1.00
69 1/2	685.00	686.00	1.00
70	690.00	691.00	1.00
70 1/2	695.00	696.00	1.00
71	700.00	701.00	1.00
71 1/2	705.00	706.00	1.00
72	710.00	711.00	1.00
72 1/2	715.00	716.00	1.00
73	720.00	721.00	1.00
73 1/2	725.00	726.00	1.00
74	730.00	731.00	1.00
74 1/2	735.00	736.00	1.00
75	740.00	741.00	1.00
75 1/2	745.00	746.00	1.00
76	750.00	751.00	1.00
76 1/2	755.00	756.00	1.00
77	760.00	761.00	1.00
77 1/2	765.00	766.00	1.00
78	770.00	771.00	1.00
78 1/2	775.00	776.00	1.00
79	780.00	781.00	1.00
79 1/2	785.00	786.00	1.00
80	790.00	791.00	1.00
80 1/2	795.00	796.00	1.00
81	800.00	801.00	1.00
81 1/2	805.00	806.00	1.00
82	810.00	811.00	1.00
82 1/2	815.00	816.00	1.00
83	820.00	821.00	1.00
83 1/2	825.00	826.00	1.00
84	830.00	831.00	1.00
84 1/2	835.00	836.00	1.00
85	840.00	841.00	1.00
85 1/2	845.00	846.00	1.00
86	850.00	851.00	1.00
86 1/2	855.00	856.00	1.00
87	860.00	861.00	1.00
87 1/2	865.00	866.00	1.00
88	870.00	871.00	1.00
88 1/2	875.00	876.00	1.00
89	880.00	881.00	1.00
89 1/2	885.00	886.00	1.00
90	890.00	891.00	1.00
90 1/2	895.00	896.00	1.00
91	900.00	901.00	1.00
91 1/2	905.00	906.00	1.00
92	910.00	911.00	1.00
92 1/2	915.00	916.00	1.00
93	920.00	921.00	1.00
93 1/2	925.00	926.00	1.00
94	930.00	931.00	1.00
94 1/2	935.00	936.00	1.00
95	940.00	941.00	1.00
95 1/2	945.00	946.00	1.00
96	950.00	951.00	1.00
96 1/2	955.00	956.00	1.00
97	960.00	961.00	1.00
97 1/2	965.00	966.00	1.00
98	970.00	971.00	1.00
98 1/2	975.00	976.00	1.00
99	980.00	981.00	1.00
99 1/2	985.00	986.00	1.00
100	990.00	991.00	1.00
100 1/2	995.00	996.00	1.00
101	1000.00	1001.00	1.00
101 1/2	1005.00	1006.00	1.00
102	1010.00	1011.00	1.00
102 1/2	1015.00	1016.00	1.00
103	1020.00	1021.00	1.00
103 1/2	1025.00	1026.00	1.00
104	1030.00	1031.00	1.00
104 1/2	1035.00	1036.00	1.00
105	1040.00	1041.00	1.00
105 1/2	1045.00	1046.00	1.00
106	1050.00	1051.00	1.00
106 1/2	1055.00	1056.00	1.00
107	1060.00	1061.00	1.00
107 1/2	1065.00	1066.00	1.00
108	1070.00	1071.00	1.00
108 1/2	1075.00	1076.00	1.00
109	1080.00	1081.00	1.00
109 1/2	1085.00	1086.00	1.00
110	1090.00	1091.00	1.00
110 1/2	1095.00	1096.00	1.00
111	1100.00	1101.00	1.00
111 1/2	1105.00	1106.00	1.00
112	1110.00	1111.00	1.00
112 1/2	1115.00	1116.00	1.00
113	1120.00	1121.00	1.00
113 1/2	1125.00	1126.00	1.00
114	1130.00	1131.00	1.00
114 1/2	1135.00	1136.00	1.00
115	1140.00	1141.00	1.00
115 1/2	1145.00	1146.00	1.00
116	1150.00	1151.00	1.00
116 1/2	1155.00	1156.00	1.00
117	1160.00	1161.00	1.00
117 1/2	1165.00	1166.00	1.00
118	1170.00	1171.00	1.00
118 1/2	1175.00	1176.00	1.00
119	1180.00	1181.00	1.00
119 1/2	1185.00	1186.00	1.00
120	1190.00	1191.00	1.00
120 1/2	1195.00	1196.00	1.00
121	1200.00	1201.00	1.00
121 1/2	1205.00	1206.00	1.00
122	1210.00	1211.00	1.00
122 1/2	1215.00	1216.00	1.00
123	1220.00	1221.00	1.00
123 1/2	1225.00	1226.00	1.00
124	1230.00	1231.00	1.00
124 1/2	1235.00	1236.00	1.00
125	1240.00	1241.00	1.00
125 1/2	1245.00	1246.00	1.00
126	1250.00	1251.00	1.00
126 1/2	1255.00	1256.00	1.00
127	1260.00	1261.00	1.00
127 1/2	1265.00	1266.00	1.00
128	1270.00	1271.00	1.00
128 1/2	1275.00	1276.00	1.00
129	1280.00	1281.00	1.00
129 1/2	1285.00	1286.00	1.00
130	1290.00	1291.00	1.00
130 1/2	1295.00	1296.00	1.00
131	1300.00	1301.00	1.00
131			

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Old Metals and Brass Turnings Wanted.

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CAST SPRING AND PLOW STEEL.
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BESSEMER MACHINERY AND CULTIVATOR STEEL.

RE-ROLLED NORWAY SHAPES.

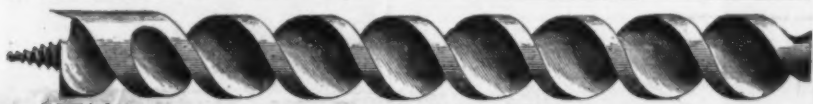
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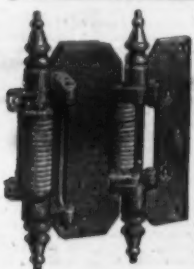
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This Cut is a full size illustration of the Patent Solid Head Auger Bit. 8-16
This Bit has no equal for boring hard wood. In cross grain, knots, and the end of the wood its great superiority over any other is strongly marked. The solid head guarantees a perfectly straight hole.

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THE BUFFALO STEEL FOUNDRY,
Manufacturers of Superior Quality
CRUCIBLE STEEL CASTINGS.
Correspondence solicited and circulars furnished.
PRATT & LETCHWORTH, Proprietors, BUFFALO, N. Y.**J. M. CARPENTER**
PAWTUCKET, R. I.Manufacturer of **TAPS AND DIES** of every description.
Also, for sale low, **UNITED STATES STANDARD GAUGES**, from 1/4 to 3 inch.**IMPROVED STEEL CASTINGS.**

Under Hainsworth's Patents.

We make Castings practically free from blow-holes, of steel which is as soft and as easily WORKED and WELDED as Wrought Iron, yet is STIFF, STRONG and DURABLE, with a TENSILE STRENGTH of not less than 65,000 lbs. to the square inch. In short, our CASTINGS UNITE THE QUALITIES OF STEEL AND WROUGHT IRON.

Wheels and Pinions, Dies and Hammer Heads, Engine and Machinery Castings of all descriptions Railroad Frogs and Crossings, Plowshares, Moldboards and Landsides.
WE USE NO CAST IRON.

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PITTSBURGH STEEL CASTING CO.,
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POWER PRESSES.The Reading
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227 Circulars sent on application.**Steel Castings,**

Light and heavy Steel Castings of superior metal, solid and homogeneous. All work guaranteed. Send for circular.

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**TUBULAR, DIAMOND,
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AND

**Tubular Street, Square
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CORPORATION

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NEW YORK STREET LAMPS,

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**LOCKSMITHS' AND BELLHANGERS'
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Locks, Knobs, Night Latches, Gongs, Blank Keys

**Wrought Store Door and
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**Dinner-Pail and
Lantern.**The most perfect Dinner Pail in the world. Hot coffee for dinner and a Lantern at night.
Manufactured by J. S. HAIGHT,
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Sent by express on receipt of \$1.00. Special attention given to export orders. Traveling Agents Wanted.

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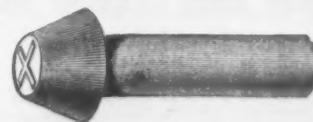
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